

GENERAL DYNAMICS World

Special Convair Edition

January 1987

To All Employees:

Last December 19th, you received a special edition of the *General Dynamics World* which provided results, on a corporatewide basis, of the recently concluded employee survey. This edition of *General Dynamics World* is a special, unique Convair edition which provides the Convair division results of the same survey.

These two special editions are intended to provide you with "global" results of the survey, first for the entire corporation and then at the division level. Hopefully, by now you have read the December edition and have gained an understanding of what some of our corporatewide strengths are as well as some of the problems that we have to work on to improve our work environment. This report will enable you to compare division responses to corporation data.

I personally want to thank all of you who took the time to take the survey which now gives us the data we need to focus on issues that you feel need to be worked. Our Chief Executive Officer, Mr. Pace and the corporate and division management teams are committed to addressing problem areas that need to be worked.

Managers of those groupings in the survey where there were at least 15 respondents will be getting a computerized report listing the questions and responses for that group. Each manager who gets such a report will meet with his/her group and provide their particular survey results.

These "feedback" sessions will be starting during January. You will be given an opportunity to provide input into a recommended action plan that will be integrated into an overall division action plan. As you can see, the process is designed to provide you with timely and candid feedback.

Thank you again for your participation. This is just the beginning of a greater effort which will be worked to further improve our corporation and division work environment.

Sincerely,

John E. McSweeney
Vice President & General Manager

Special Report: 1986 Survey of Employees Convair Division

On December 19th, a special edition of *General Dynamics World*, reporting the corporatewide results of the 1986 Survey of Employees, was distributed to all General Dynamics employees. As we told you in that Report, survey results had also been compiled on a divisional level and those results would also be shared with employees.

This *General Dynamics World* special division edition contains the results for the Convair Division.

The employees at Convair, like their counterparts throughout General Dynamics, played an important role in the development of this survey. We met with a small representative group of Convair employees during the summer of 1986. Their candid input regarding the things they like and dislike about working for General Dynamics and for Convair and their input regarding the policies and practices they believe contribute to or inhibit their ability to get their work done effectively helped us a great deal in constructing questions about the issues that are important

These 87 questions are, we believe, the most important items contained in the survey, reflecting both the Corporation's and division's key strengths and areas of weakness. Questions not shown here are very similar in content to those we have presented and were included in the survey to assure the validity and reliability of the questionnaire. The additional questions are in the possession of Convair's survey coordinator and may be viewed by any interested employee. Further, employees who would like to compare the responses of Convair employees to the *collective* responses of all General Dynamics employees should refer to the special corporatewide edition of *General Dynamics World*.

Participation in the survey was voluntary. Nonetheless, 4,548 Convair employees completed the survey, which represents 51% of the Convair employee population, and is somewhat below the response rate we found in the Corporation overall. All answer sheets were mailed directly to us. We computer analyzed the responses to the multiple choice questions and read through all the write-in responses.

As was true of the total General Dynamics work force, Convair employees answered the write-in questions with great thoughtfulness. Some write-in items generated a response rate as high as 70%. The write-in responses were of enormous value in our understanding of employee views on a wide range of issues and were very helpful in our ability to present to management a thorough analysis of employee attitudes.

SIROTA AND ALPER ASSOCIATES, Inc.

We provided all the data, explanatory text and analysis for this Special Edition.

David Sirota, Chairman

to Convair employees on corporate, divisional, and departmental levels. We also, on the advice of the Corporation, sought input from the union leadership of Convair, and their participation, too, has been extremely helpful.

The survey, which was administered during September and October, included 125 questions that were asked of all employees throughout the Corporation. In addition, each division included another 40-50 questions that addressed topics of unique relevance to their employees.

This edition of *General Dynamics World* presents and analyzes the responses provided by Convair employees to 76 questions asked in the corporatewide section of the survey and 11 questions asked in the divisionwide section.

Convair Employees Responding to Survey

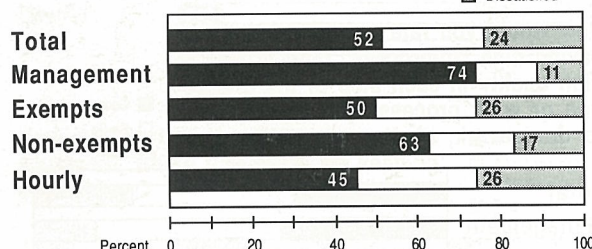
Classification of Employees	Number
Management Employees	477
Exempt Employees (non-managers such as engineers and staff)	2,026
Non-exempt Employees (management support personnel)	350
Hourly Employees	1,628
Unidentified Employees	67
Total Employees	4,548

1. Overall Satisfaction

Explanation: In this section, employees were asked to rate their overall level of satisfaction in working for General Dynamics and in working for Convair. Their responses provide an all-inclusive measure of employee morale and satisfaction. Later sections of this Report will explore in detail the specific factors that contribute to these general feelings.

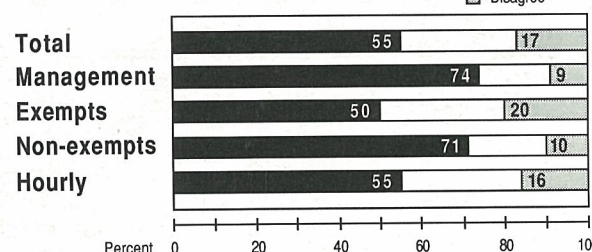
Considering everything, how would you rate your overall satisfaction as an employee here?

■ Satisfied
□ Neither satisfied nor dissatisfied
□ Dissatisfied



All in all, I enjoy working at Convair.

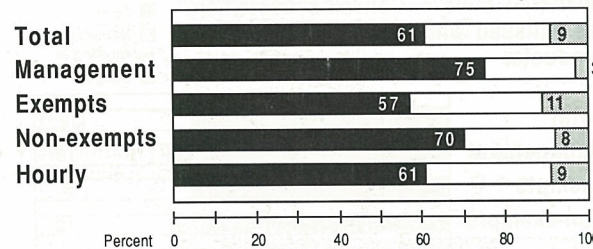
■ Agree
□ Neither agree nor disagree
□ Disagree



Employees were also asked about the pride they feel in working for the Corporation and in working for Convair. Pride is a key element in employee satisfaction. People want very much to feel proud of their company, proud of the services they provide, and proud of their working conditions. Since pride is so closely linked to overall satisfaction, it is discussed under this heading.

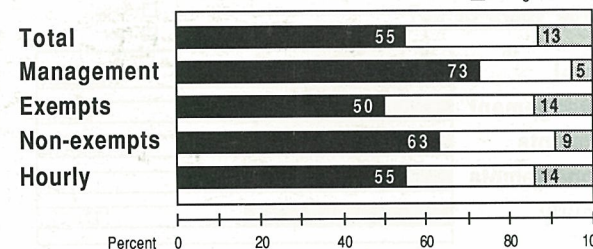
To what extent do you agree or disagree: I feel proud to work for General Dynamics.

■ Agree
□ Neither agree nor disagree
□ Disagree



To what extent do you agree or disagree: I feel proud to work for my division.

■ Agree
□ Neither agree nor disagree
□ Disagree



Analysis: The survey shows a moderately — but not highly — favorable level of overall satisfaction among Convair employees. Approximately 52% of all employees report they are satisfied; 24% say they are neither satisfied nor dissatisfied, and 24% say they are dissatisfied.

As is commonly found in employee surveys, management is the most favorable of all groups. Non-exempts are the next most favorable group. Exempts and hourly workers are less satisfied.

When asked if they enjoy working at Convair, most managers and non-exempts agreed that they do, along with about one half of exempts and hourly employees.

In general, employees feel pride in working for both General Dynamics and for their division. The level of pride employees take in General Dynamics overall is slightly higher than the level of pride they take in the division: 61% of all employees agree that they feel proud to work for the Corporation and 55% feel proud to work for the division.

Again, managers are somewhat more favorable in their ratings. Exempts, while still favorable overall, are less favorable than other employees.

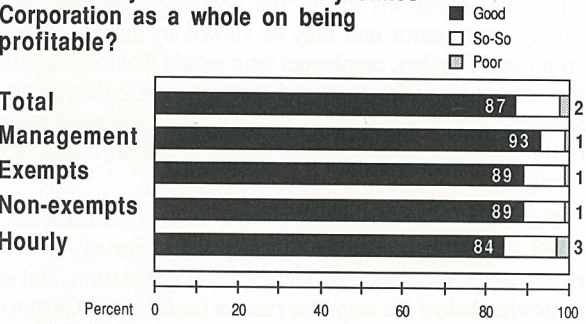
In summary, before moving on to a discussion of the specific components of overall satisfaction, the survey shows that employees within Convair generally rate their satisfaction positively. However, about one-fourth of exempt and hourly employees are dissatisfied. Convair employees rate their pride in working for the Corporation and the division favorably. Managers are especially positive. Non-exempt employees are next most favorable, with exempt and hourly employees somewhat less positive.

2. General Performance of General Dynamics

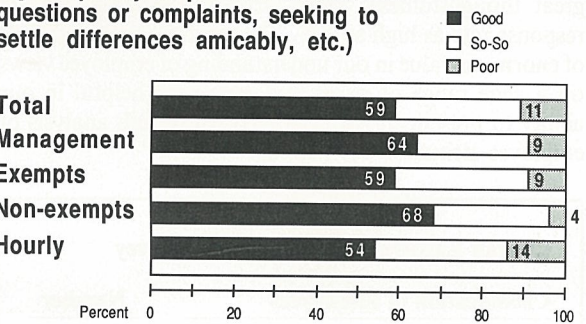
Explanation: This section deals with how Convair employees view the performance of General Dynamics, the corporation, overall. Employees were asked to rate the Corporation's performance in five key areas: profitability, customer relations, corporate citizenship, public relations, and future business prospects.

Each of these five elements contributes to employees' overall satisfaction and their pride in the Corporation. People want to work for a corporation that they feel performs well. Among other reasons, confidence in a corporation's performance gives employees a strong sense of job security and enhances their feelings of esteem.

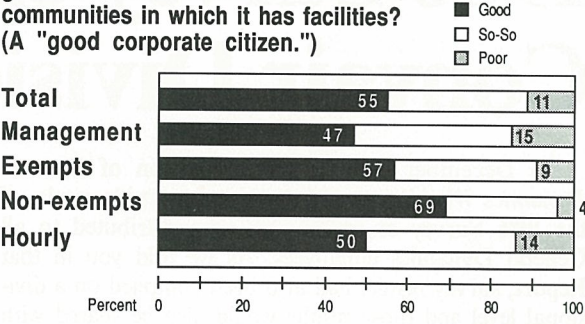
How would you rate General Dynamics Corporation as a whole on being profitable?



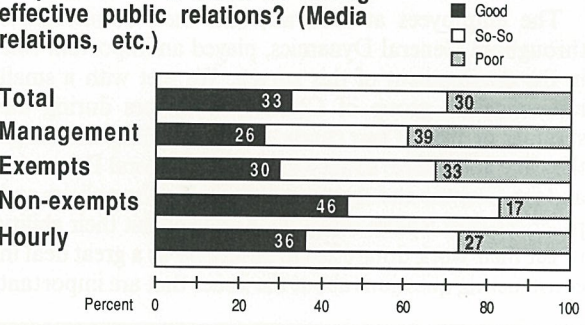
How would you rate General Dynamics Corporation as a whole on having effective customer relations? (Being sensitive to customer needs, responding as quickly as possible to customer questions or complaints, seeking to settle differences amicably, etc.)



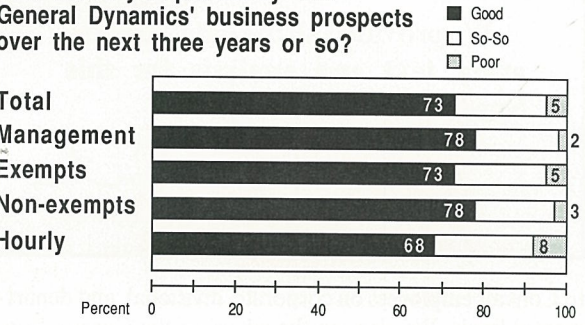
How would you rate General Dynamics Corporation as a whole on taking a genuine interest in the welfare of the communities in which it has facilities? (A "good corporate citizen.")



How would you rate General Dynamics Corporation as a whole on having effective public relations? (Media relations, etc.)



How would you personally rate General Dynamics' business prospects over the next three years or so?



Analysis: Convair employees are highly positive regarding the profitability of General Dynamics. Eighty-seven percent of total Convair employees rate the Corporation "good" on being profitable.

In general, Convair employees believe that the Corporation has effective customer relations. Nearly 60% of all employees feel that General Dynamics is sensitive to customer needs, responds quickly to queries and is effective in the amicable resolution of differences.

A majority of non-managerial employees believe that General Dynamics is a "good corporate citizen," while Convair managers say "good" to "so-so" regarding the Corporation taking a genuine interest in the welfare of the communities in which it has facilities.

Across all employee groups, there's a very strong optimism regarding the Corporation's business prospects over the next three years. Two-thirds to more than three-fourths of all employee groups rate these prospects as "good." The survey shows, therefore, not only a high level of confidence in the Corporation's current profitability, but in its future profitability as well.

In general, there is a consistency among employee groups in three areas: profitability, customer relations, and business prospects. However, the view is somewhat mixed regarding customer relations and highly mixed regarding public relations. Many employees rate the Corporation "so-so" or "poor" on having effective public relations. Management is least favorable, with roughly only one-fourth rating public relations "good." Exempts and hourly workers are also mixed in their view, while non-exempts are somewhat more favorable than other Convair employees, with 46% indicating that they believe General Dynamics' public relations efforts are effective.

3. General Performance of Convair

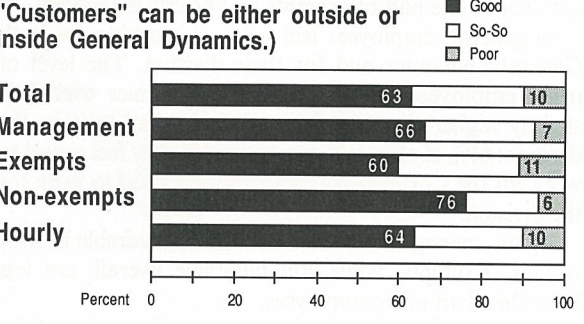
Explanation: Here the survey moves from employees' views of the performance of General Dynamics overall to their views of the performance of the Convair Division.

Three areas that were explored in the previous section are also explored here: profitability, customer relations, and business prospects. However, several new areas are introduced in this section. Employees were asked to assess the quality of the products Convair manufactures, the technical excellence of these products, and whether they believe customers are satisfied with product quality.

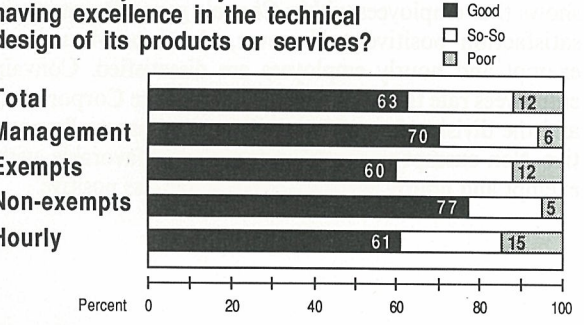
A series of questions deals with Convair's sense of direction, planning, efficiency, "in-process" quality, ability to compete effectively for business, and ability to meet product delivery schedules.

Finally, employees were asked to rate teamwork and cooperation within Convair and to provide a bottom-line assessment of the division's performance over the past six months.

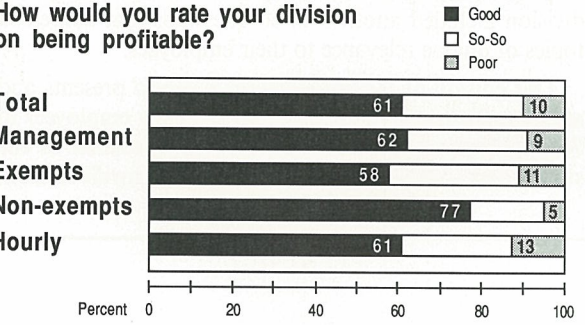
How would you rate your division on producing products of high manufactured quality? (If your division delivers a service, think of the quality with which the service is delivered to customers. "Customers" can be either outside or inside General Dynamics.)



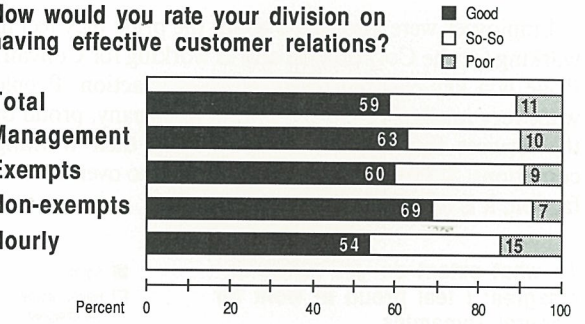
How would you rate your division on having excellence in the technical design of its products or services?



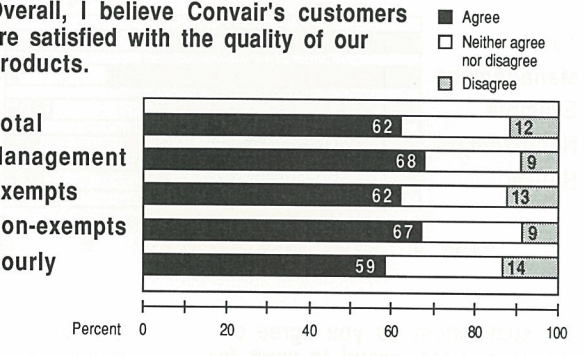
How would you rate your division on being profitable?



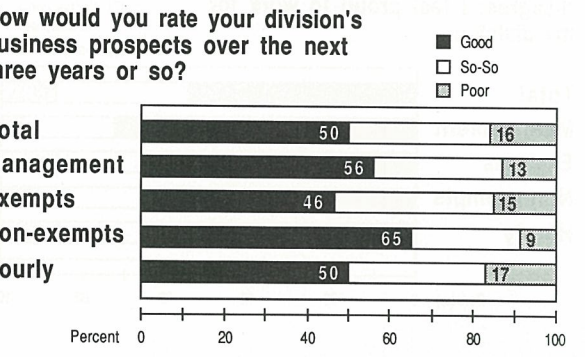
How would you rate your division on having effective customer relations?



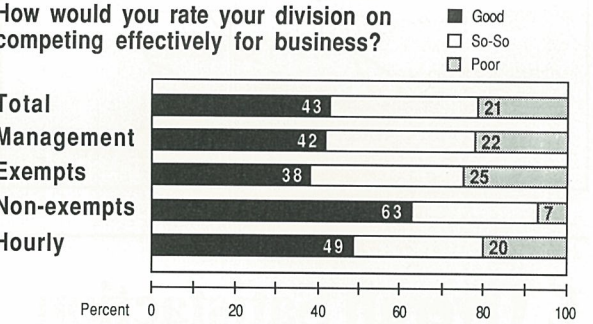
Overall, I believe Convair's customers are satisfied with the quality of our products.



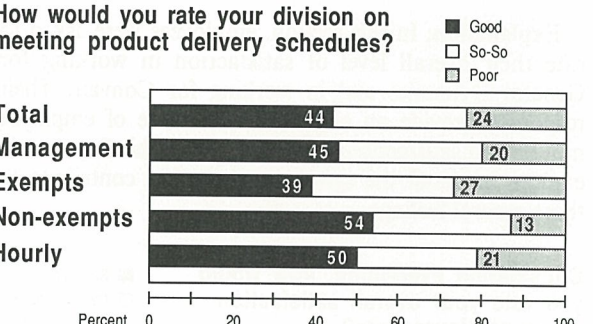
How would you rate your division's business prospects over the next three years or so?



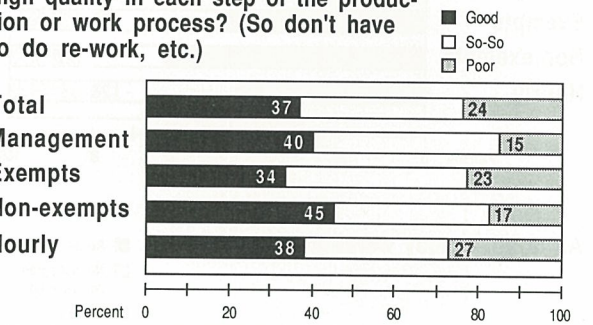
How would you rate your division on competing effectively for business?

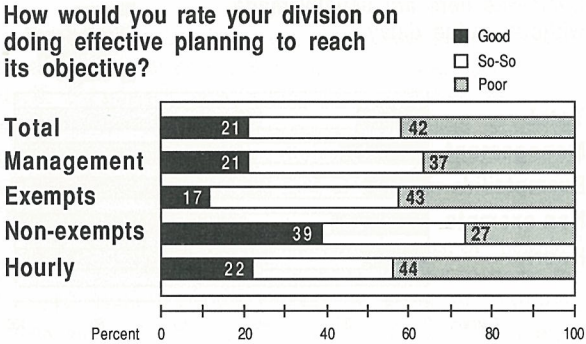
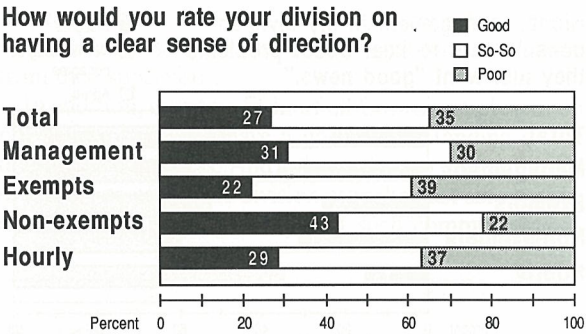


How would you rate your division on meeting product delivery schedules?

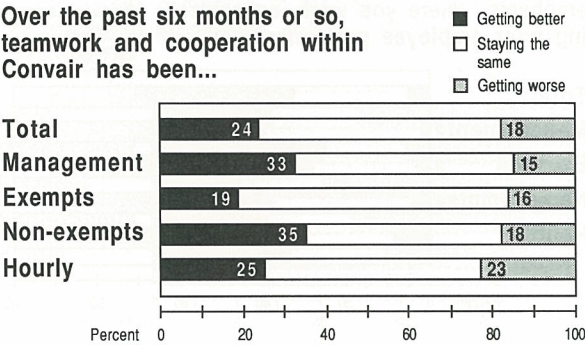
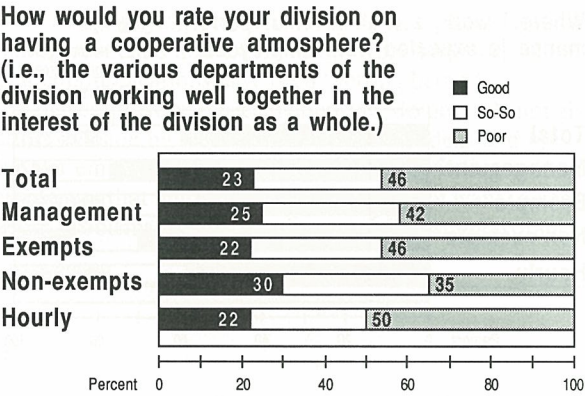


How would you rate your division on having high "in-process" quality, that is, high quality in each step of the production or work process? (So don't have to do re-work, etc.)

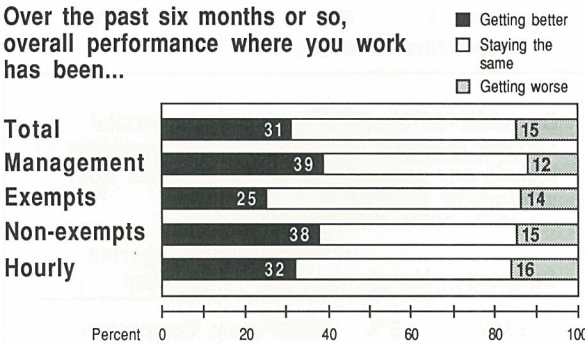
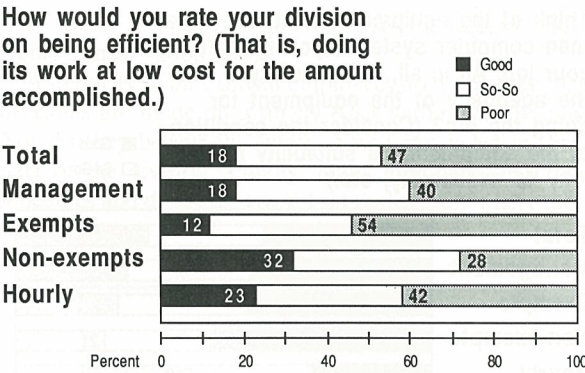




Analysis: Employees' responses regarding the performance of Convair indicate areas of strength as well as areas where there are opportunities for improvement. Those areas that are rated most favorably deal with the products themselves. Employees are generally pleased with the manufactured quality and the technical excellence of the products Convair produces. A strong majority of Convair employees also believe that the division's customers are satisfied with product quality. A wide majority of Convair employees, particularly non-exempts, believe the division conducts its business in a profitable manner. However, they do not rate the division quite as favorably in this area as they rate the Corporation as a whole. Convair employees, by a strong margin, also believe that customer relations within the division are effective,



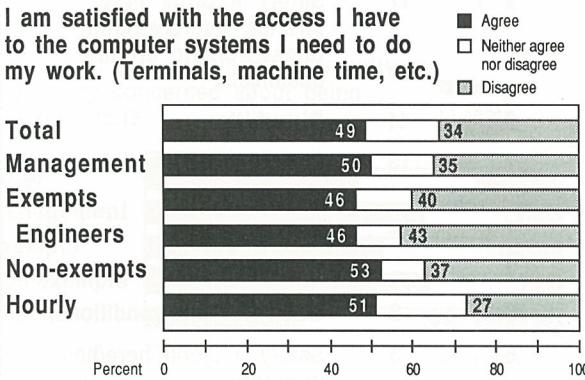
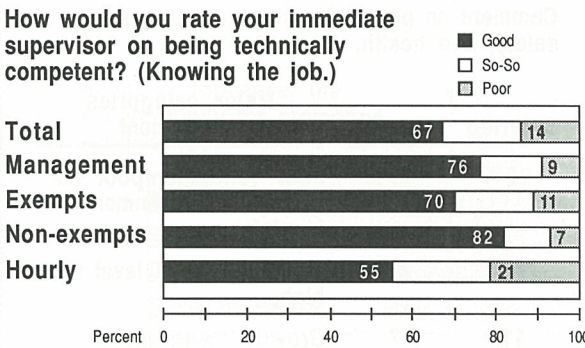
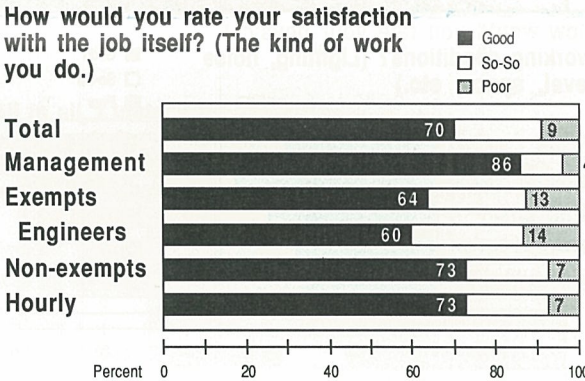
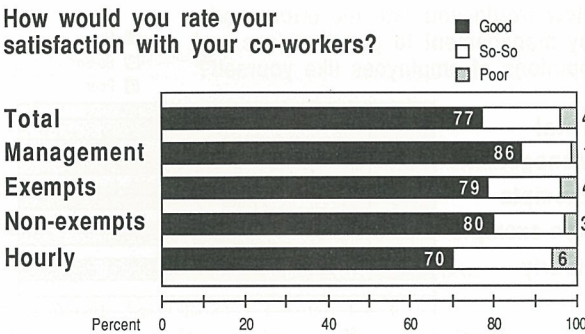
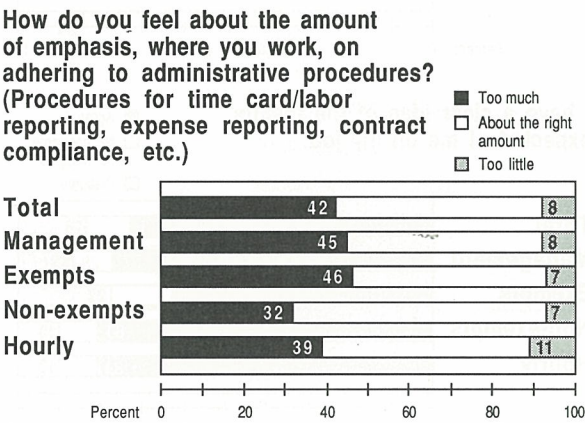
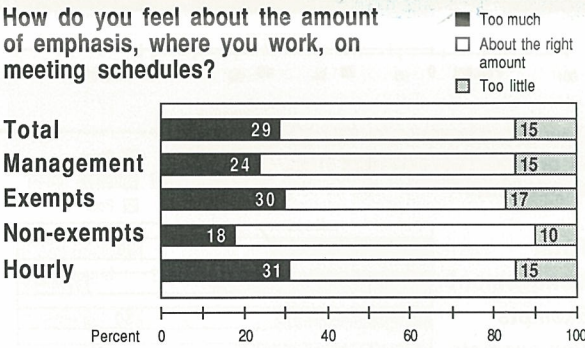
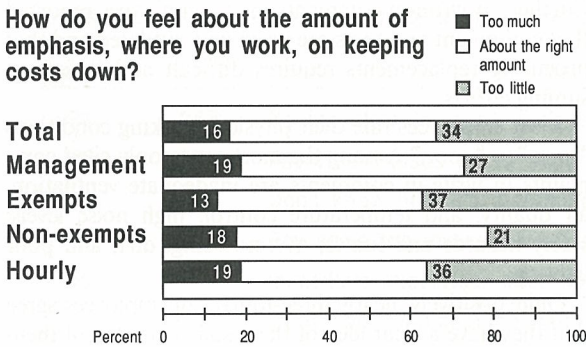
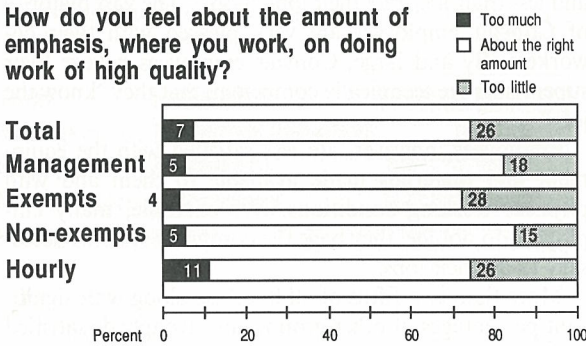
and here the division ratings are almost identical to the ratings of the Corporation. Employees are moderately favorable regarding the division's business prospects, but, again, they are more positive when they rate the Corporation overall in this area. Less favorable ratings are given to a number of other performance components. A majority of non-exempts believe that Convair competes effectively for business, while other groups generally rate the division "good" to "so-so," and a fifth of all employees say Convair is "poor" in competing for business. The ratings of Convair's ability to meet delivery schedules follow very similar patterns. "In-process" quality, or the quality of the product during its development, is rated "good" by 37% of total Convair employees and "poor" by nearly one-fourth of employees. Many employees provide unfavorable ratings of Convair



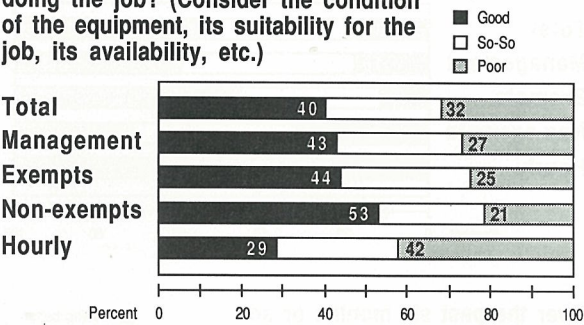
on having a clear sense of direction, doing effective planning to meet its objectives, being efficient, and having a cooperative atmosphere. In all four of these areas, significantly more employees rate the division "poor" than rate the division "good." Employees, however, do see some positive changes taking place. One-fourth of the total Convair workforce believe that teamwork and cooperation within Convair has been "getting better." Furthermore, one-third of all employees believe that the overall performance of the division has been improving.

4. Ability to Get Work Done

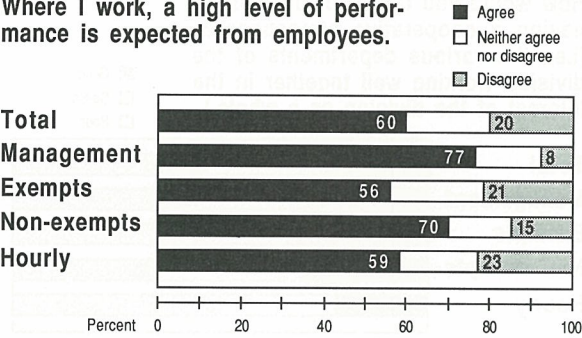
Explanation: This area deals with the various tools, resources, programs, and so forth that help Convair employees get their work done effectively when administered well and that interfere with effective job performance when administered poorly. What are the factors, this section asks, within General Dynamics and within Convair that enhance employees' ability to get the job done and what are the factors that inhibit employees' ability to get the job done. The issues explored here include the priorities Convair establishes for its employees, communications between management and employees, relationships among co-workers, the competence of supervisors, performance expectations, equipment and tools, physical working conditions, decision-making, the setting of deadlines and schedules, and employees' satisfaction with the work itself.



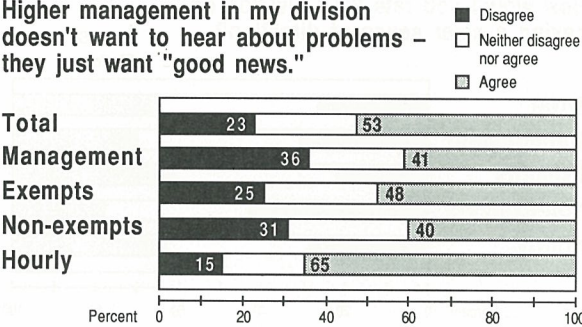
Think of the equipment and tools, other than computer systems, you need for your job. All in all, how would you rate the adequacy of the equipment for doing the job? (Consider the condition of the equipment, its suitability for the job, its availability, etc.)



Where I work, a high level of performance is expected from employees.



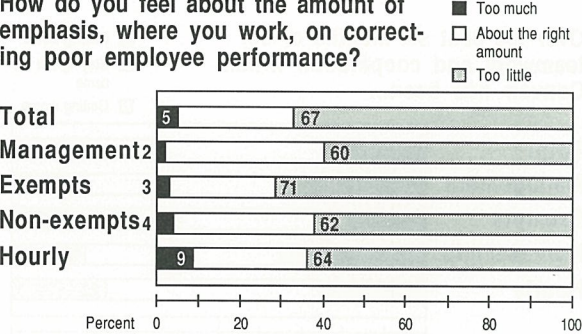
Higher management in my division doesn't want to hear about problems - they just want "good news."



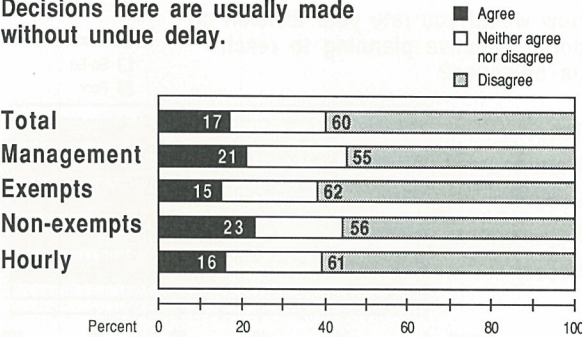
Comment on equipment, or parts/materials/supplies you use in your work. (If appropriate, include any comments on items obtained from vendors or from the government.)

		Major categories of comment
Salaried	Hourly	
23 %	5 %	Need more computers/upgrade computers.
20	15	Not enough equipment, parts, tools, etc.
17	22	Improve availability/takes too long to get/too much time waiting, searching for tools and parts.
13	29	Equipment and/or tools in poor shape/worn/outdated.
9	8	Good availability/good equipment and supplies.
5	9	Poor quality vendor parts/buying poor quality.
3	6	Poor maintenance of equipment/need better maintenance.
10	6	Miscellaneous.
100 %	100 %	

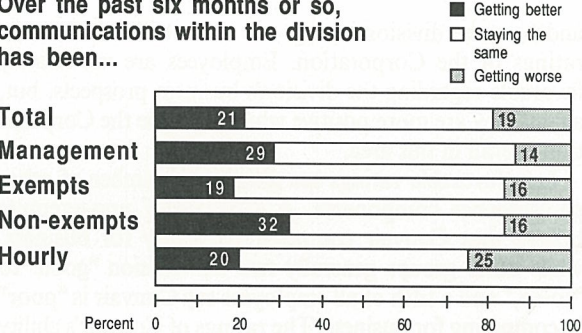
How do you feel about the amount of emphasis, where you work, on correcting poor employee performance?



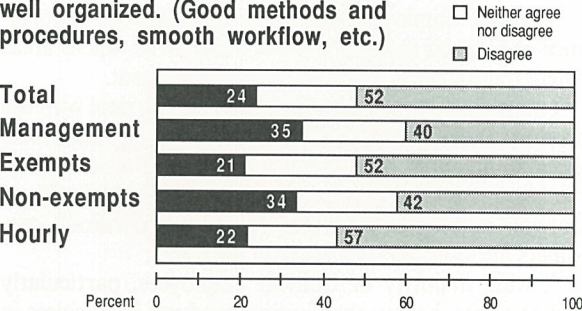
Decisions here are usually made without undue delay.



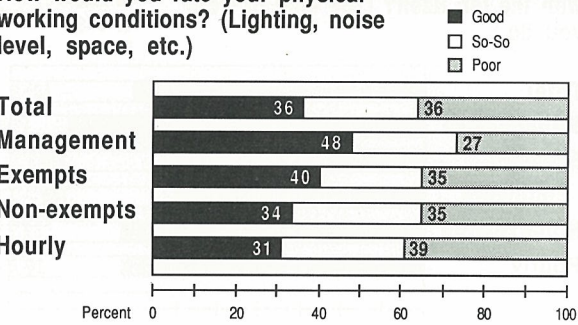
Over the past six months or so, communications within the division has been...



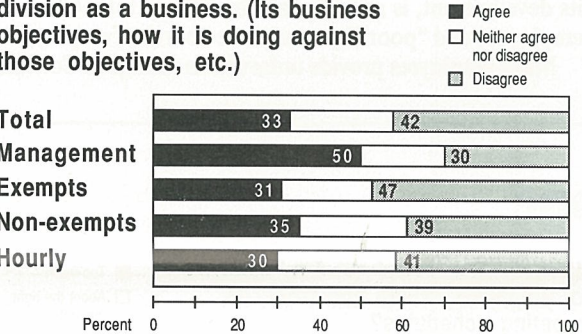
In my part of the division, the work is well organized. (Good methods and procedures, smooth workflow, etc.)



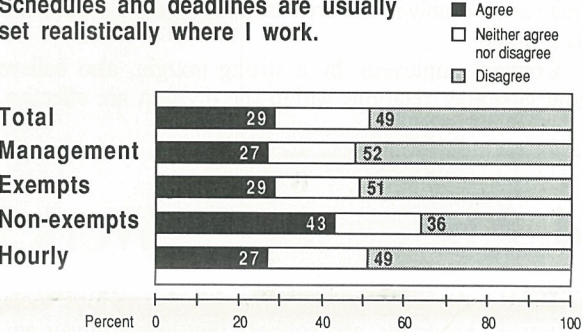
How would you rate your physical working conditions? (Lighting, noise level, space, etc.)



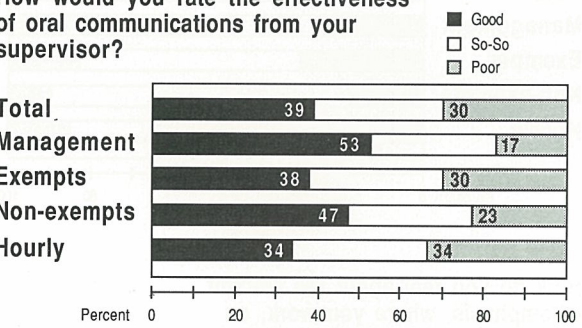
I have a good understanding of my division as a business. (Its business objectives, how it is doing against those objectives, etc.)



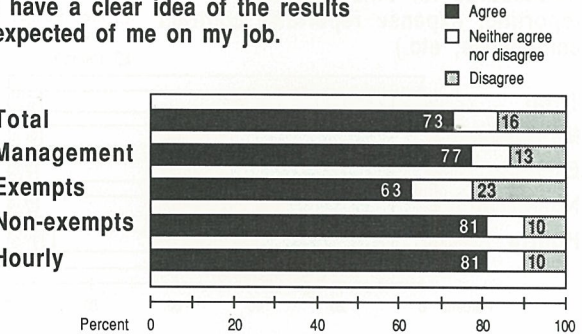
Schedules and deadlines are usually set realistically where I work.



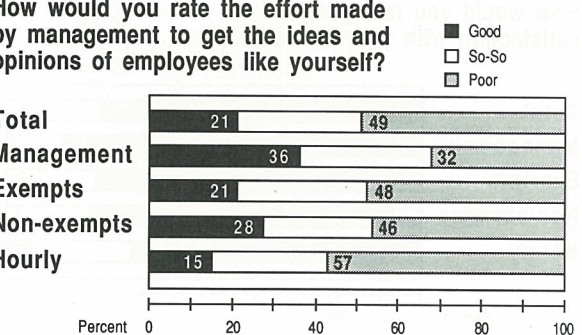
How would you rate the effectiveness of oral communications from your supervisor?



I have a clear idea of the results expected of me on my job.



How would you rate the effort made by management to get the ideas and opinions of employees like yourself?



Comment on physical working conditions, safety, and health.

		Major categories of comment
Salaried	Hourly	
20 %	17 %	Poor ventilation/poor air quality/hot in summer, cold in winter.
12	10	Too noisy/noise level too high.
11	7	Crowded/need more space.
9	17	Safety hazards here/strange odors/welding fumes/working around chemicals.
9	11	Dirty/filthy.
7	13	Poor lighting/need better lighting.
7	-	No privacy.
7	-	Needs nicer decor.
6	8	Good working conditions.
5	3	Safety is good here/has improved.
4	2	Smoking bothers me/need a no smoking policy.
3	12	Miscellaneous.
100 %	100 %	

Analysis: Employees generally agree that the division has done a good job in establishing work priorities. Between about half to two-thirds of all employees feel that the right amount of emphasis is placed on each of four central areas: doing work of high quality, keeping costs down, meeting schedules, and adhering to administrative procedures.

Nonetheless, considerable percentages of employees feel there's "too much" emphasis on adhering to administrative procedures and on meeting deadlines. Many employees also feel that "too little" emphasis is placed on doing work of high quality and keeping costs down.

Overall, Convair employees like their jobs. Seventy percent of the employee population rate their jobs "good" and less than 10% rate their jobs "poor." The vast majority of Convair employees are very pleased with their co-workers. By and large, Convair employees believe their supervisors are technically competent, that they "know the job."

Employees, however, are less satisfied with the equipment and materials made available to them and with physical working conditions. For example, many employees do not feel they have the computer systems necessary to do their jobs.

More than two-fifths of all hourlies, along with significant percentages of other groups, are strongly dissatisfied with equipment and tools, other than computer systems. Further, in write-in comments many employees reported that equipment and tools are worn and outdated and that procuring replacements requires difficult and time-consuming efforts.

Most employees rate their physical working conditions "so-so" to "poor." Among the most commonly cited complaints in write-in comments are inadequate ventilation, air quality, and temperature control; high noise levels; safety hazards and fumes; overcrowding; dirt, and poor lighting.

Quite positively, nearly three-fourths of employees agree that they have a clear idea of the results expected of them on the job. Likewise, most employees believe that a high level of performance is expected of them.

Nonetheless, a wide majority of Convair employees feel that too little is done to correct poor employee performance. The unfavorable rating in this area may be connected to the concern employees express about communications within the division. Significant percentages of all em-

ployees, with the exception of management, rate as "poor" the effectiveness of the oral communications they receive from their supervisor.

In addition, over two-fifths of all Convair employees do not believe that they have a good understanding of the division as a business. And, when asked to evaluate communications within the division over the past six months, a majority of employees say that such communications

have been "staying the same." Significant percentages of management and non-exempt employees, however, believe that communications have been "getting better."

Most employees, especially hourly, do not feel enough effort is made by management to get the ideas and opinions of employees. There is also a strong feeling among employees that higher management does not want to hear about problems. Again, hourly are the most unfavorable,

with nearly two-thirds reporting that management just wants to hear "good news."

A majority of all Convair employees do not believe that decisions are made on a timely basis within the division. Nor do they believe that work is well organized in their part of the division. Finally, many employees feel that schedules and deadlines are not set realistically where they work.

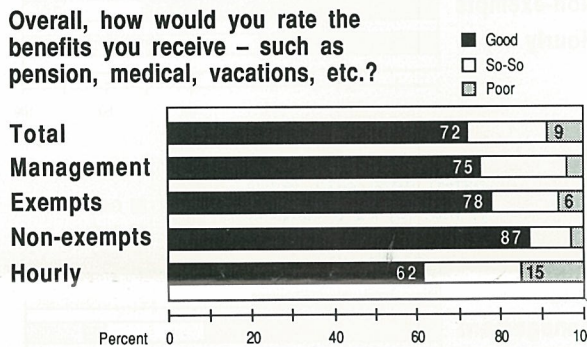
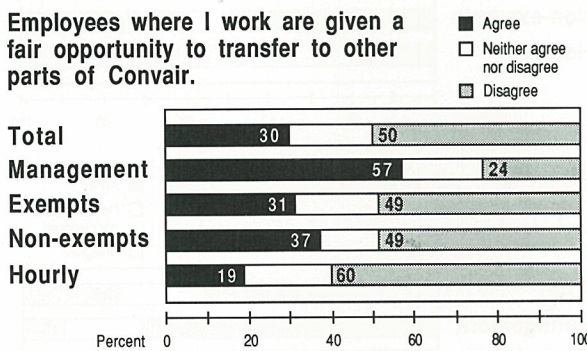
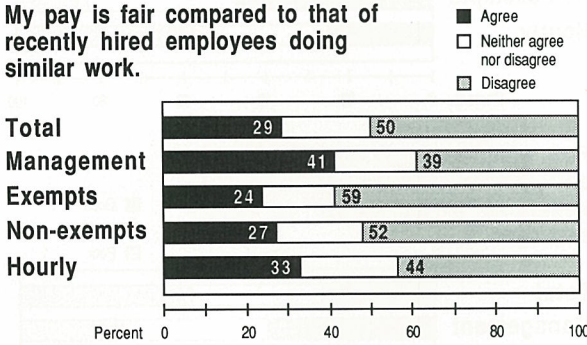
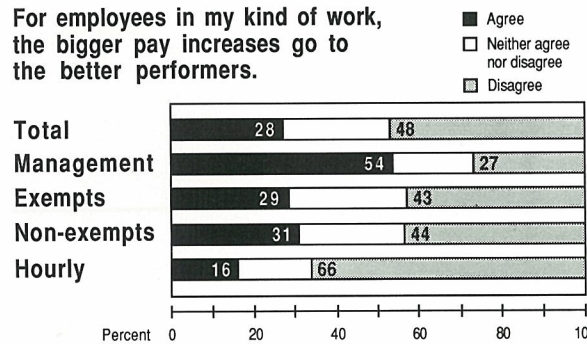
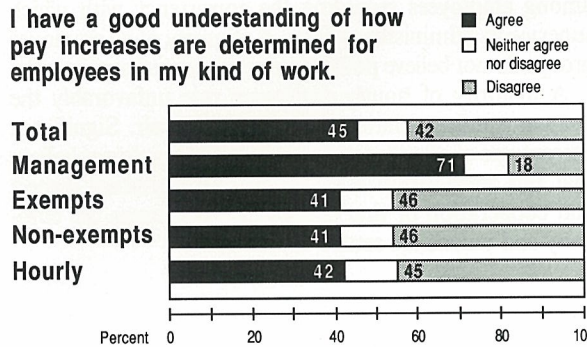
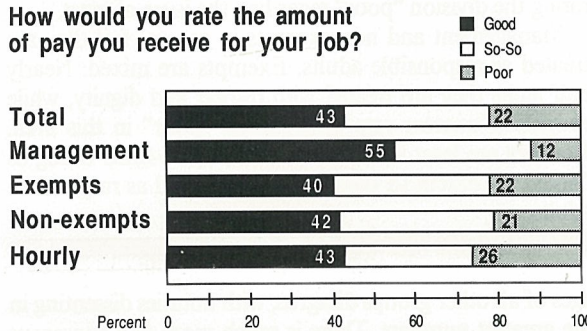
5. Treatment of Employees

Explanation: Until now the survey has addressed issues involving corporate and division performance and the job itself. Employees were asked how they feel about the performance of the Corporation overall and about the performance of the Convair division. They were also asked about a number of factors that affect their ability to get their work done.

Now, the survey turns to human relations, or "people," issues. Questions here involve what it's like to work for General Dynamics and Convair in terms of economic issues and what it's like to work for General Dynamics and Convair in terms of the trust, respect and dignity employees are shown.

A. Economic Issues

Explanation: Employees here were asked how they feel about their pay and about benefits, including pension, medical coverage, and vacations. Their views were also sought regarding their understanding of the pay system: Do they understand how pay increases are determined and do they believe that increases are tied to performance excellence? Likewise, employees were asked whether they understand promotion policies and practices and whether they believe these are a fair reflection of job performance. Finally, employees were asked to rate their job security.

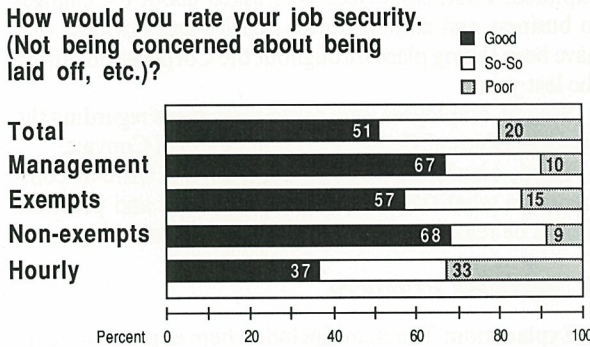
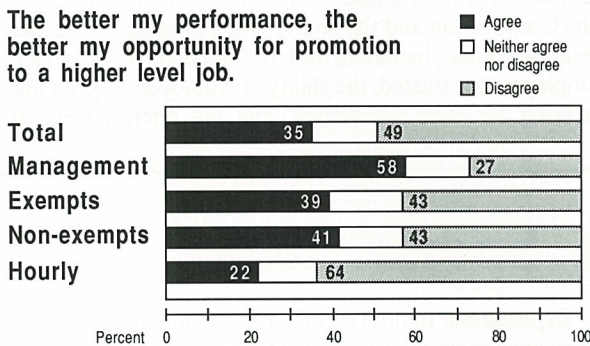
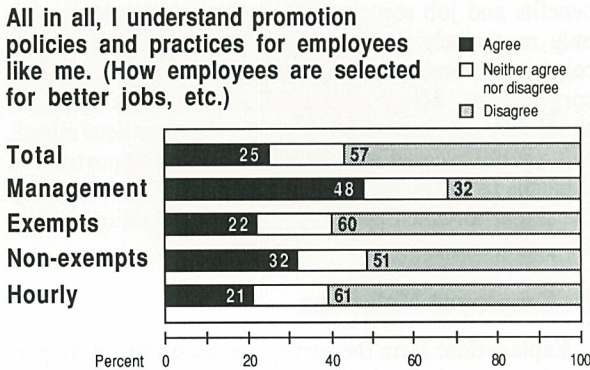
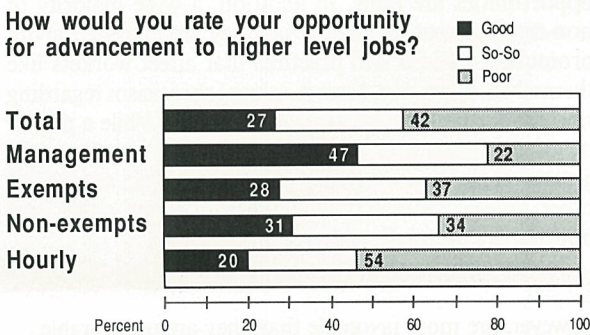


With which benefits are you most satisfied?

Salaried	Hourly	Major categories of comment
37 %	48 %	Medical benefits/hospitalization.
27	18	SSIP/stock savings.
10	14	Dental.
6	7	Vacation.
6	-	Retirement/pension.
3	-	Sick leave.
2	6	Prescription drugs.
9	7	Miscellaneous.
100 %	100 %	

With which benefits are you least satisfied?

Salaried	Hourly	Major categories of comment
26 %	13 %	Vacations/third week earlier/third week after 5 years.
15	32	Pension plan/retirement.
15	14	Dental.
10	10	Eye care/optical.
8	5	Medical/remove deductible/old plan was better.
7	2	Educational benefits.
5	13	Sick days/sick leave.
4	7	More SSIP/company match savings.
10	4	Miscellaneous.
100 %	100 %	



Comment about pay for performance in this company.

Salaried	Hourly	Major categories of comment
21 %	25 %	No incentive for hard workers/no relation between pay and performance.
18	27	Favoritism/raises go to supervisor's favorites.
12	6	Don't know how it's determined/secrecy about the process.
10	11	Pay scale too low/raises not sufficient.
10	4	Immediate supervisor does not have enough say/higher levels making decisions.
9	3	Merit pool allotment not fair/good employees bypassed.
6	5	Merit pay is good idea/agree with pay for performance.
6	3	Disparity between new and older employees/older employees get less.
-	4	Should not have wage ceiling if do good job/no incentive when reach top of scale.
8	12	Miscellaneous.
100 %	100 %	

Analysis for Economic Issues: Convair employees are moderately satisfied with their pay. Forty-three percent of all employees rate their pay "good" and 22% rate their pay "poor." Management is somewhat more satisfied than other Convair employee groups, with more than half reporting favorable ratings. All other groups are fairly close in their assessments of pay, and Convair employees in general rate their pay more favorably than do employees at other American corporations.

With the exception of management, considerable percentages of all employee groups feel that they do not understand how the pay system works. Less than half of all non-management employees agree that they understand how pay increases are determined for employees in their kind of work. Additionally, close to half of all non-management employees, including two-thirds of hourly, do not believe that the bigger pay increases go to better performers. Favoritism, many employees explain in write-in comments, is a factor in determining who receives raises, rather than raises being determined solely on the basis of performance.

Half of all Convair employees believe that their pay is not fair when compared to the pay received by recently hired employees doing similar work. An identical percentage of employees do not believe they are given a fair opportunity to transfer to other parts of Convair.

Benefits are rated very favorably by a wide majority of Convair employees. Hourlies are somewhat — but not substantially — less favorable than salaried employees. Among the benefits employees are most satisfied with are medical and hospitalization coverage, and the SSIP Plan. The benefits employees are least satisfied with include paid vacations and pension benefits. Many employees, salaried workers in particular, wrote in to say that they desire a third week of paid vacation after a shorter period of service than is currently required.

Convair employees, particularly non-managers, are not highly satisfied with their opportunities for advancement. More than two-fifths of all employees say advancement opportunities are poor. In addition, a wide majority of non-management employees say they are confused about promotion policies and practices that affect workers like themselves. Here, too, there is general skepticism regarding rewards for better-performing employees. While a majority of managers agree that the better they perform the greater their opportunity for advancement, among all other groups more employees disagree than agree, and hourly are especially unfavorable.

Job security is rated favorably by a wide majority of all employee groups, other than hourly employees. Hourlies, however, are more favorable than they are unfavorable.

Overall, the survey shows high levels of satisfaction with benefits and job security. While Convair employees are only moderately positive about their pay, their ratings compare favorably with those found in other American corporations. Many employees, however, are confused about how pay increases and promotions are determined, and are not pleased with the advancement opportunities available to them. Nor do most employees rate favorably the extent to which pay increases and promotions reflect job performance.

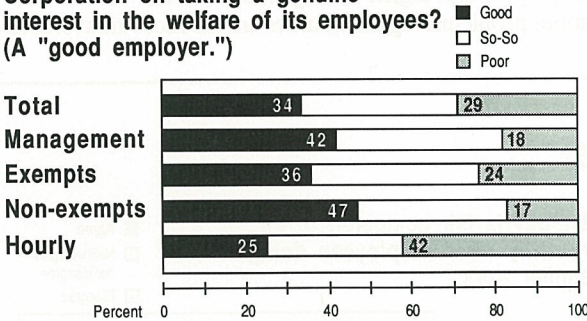
B. Employee Relations

Explanation: Here the survey deals with the more personal aspects of what it's like to be an employee of Convair and of General Dynamics. Employees were asked to assess the Corporation and the division on a number of "human relations" areas, including the trust and dignity with which employees are treated, the ability of employees to get a fair hearing for their complaints, and the interest General

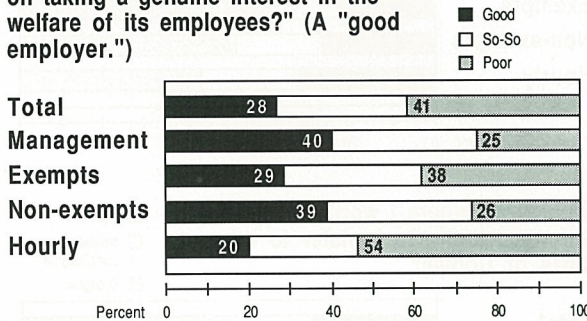
Dynamics overall and the Convair division show in the welfare of their employees.

The relationship between the division and the unions is also assessed under this heading.

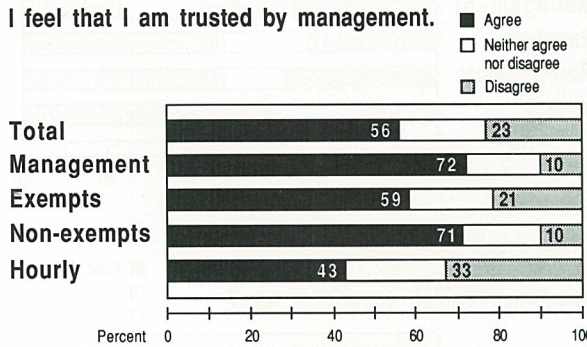
How would you rate General Dynamics Corporation on taking a genuine interest in the welfare of its employees? (A "good employer.")



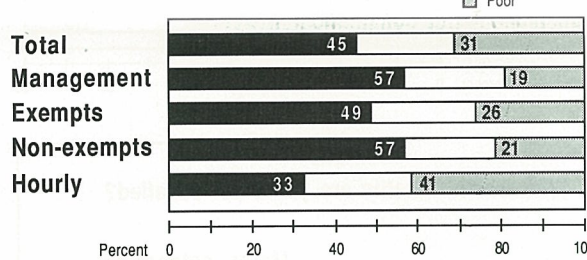
How would you rate your division on taking a genuine interest in the welfare of its employees? (A "good employer.")



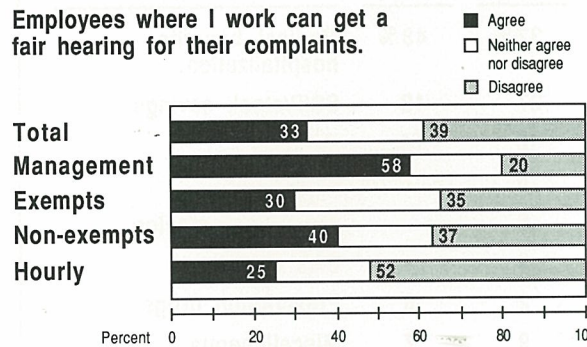
I feel that I am trusted by management.



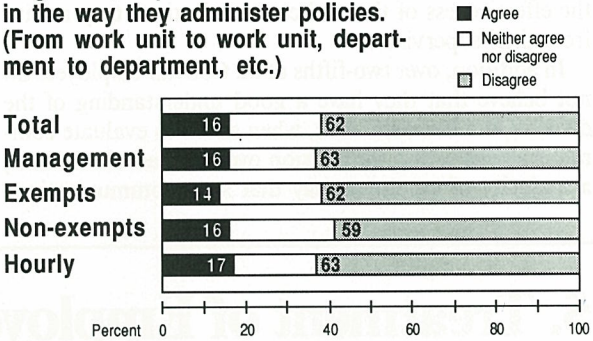
How would you rate the extent to which you are treated here with respect and dignity, that is, as a responsible adult?



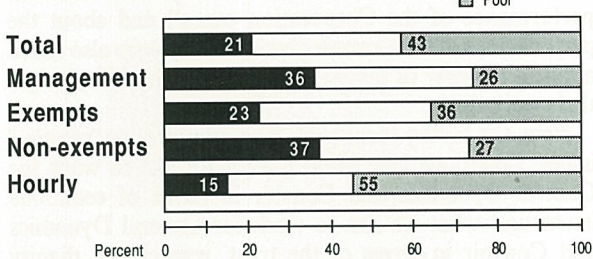
Employees where I work can get a fair hearing for their complaints.



In general, supervisors are consistent in the way they administer policies. (From work unit to work unit, department to department, etc.)



How would you rate the relationship between the company and the union(s) in Convair?



Analysis for Employee Relations: Convair employees offer a mixed view of General Dynamics as taking a genuine interest in the welfare of its employees. And, they view the division somewhat less favorably in this regard.

More than a quarter of all Convair employees rate General Dynamics "poor" on the question of being interested in employee welfare, and slightly more than two-fifths of employees rate the division "poor" on the same question. Overall, more Convair employees are favorable than unfavorable regarding General Dynamics interest in employee welfare. The opposite is true on a division level.

Salaried employees, by and large, believe they are trusted by management. Hourlies, however, are mixed, with a third rating the division "poor" regarding the issue of trust.

Management and non-exempts in general feel they are treated as responsible adults. Exempts are mixed: Nearly half agree they are treated with respect and dignity, while roughly a quarter rate the division "poor" in this area. Hourlies are least favorable, with over two-fifths rating as "poor" the extent to which they are treated as responsible adults.

Management feels for the most part that employees can get a fair hearing for their complaints. Significant percentages of all other groups disagree, with hourly dissenting in the greatest numbers. There is much more of a consensus among employees regarding the consistency with which supervisors administer policies. A majority of all employee groups do not believe policies are administered consistently.

A majority of hourly employees rate unfavorably the company/union relationship within Convair. Significant percentages of all other employee groups also do not believe that this relationship is characterized by mutual respect and cooperation or that disagreements between the company and unions are settled effectively.

6. Special Issues

Explanation: In this special issues section, three areas of particular concern to General Dynamics and Convair are explored. First, employees were asked about the changes in business and administrative policies and practices that have been taking place throughout the Corporation during the last year.

Second, employees were asked their views regarding the business ethics of General Dynamics and of Convair.

Third, employees were invited to offer write-in comments on what they feel Convair's policies and practices should be regarding illegal drug usage and smoking.

A. Business Practices

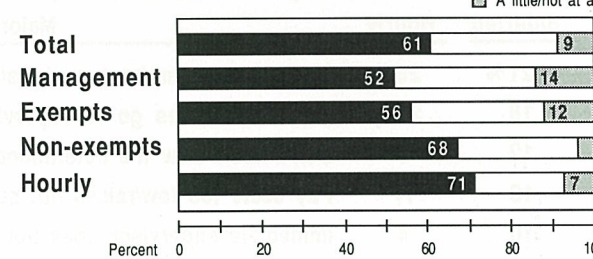
Explanation: The items included here explore in detail Convair employees' views of the changes General Dynamics has instituted in its business practices during the last year,

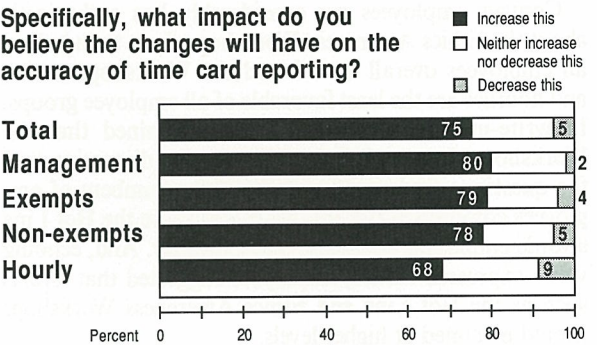
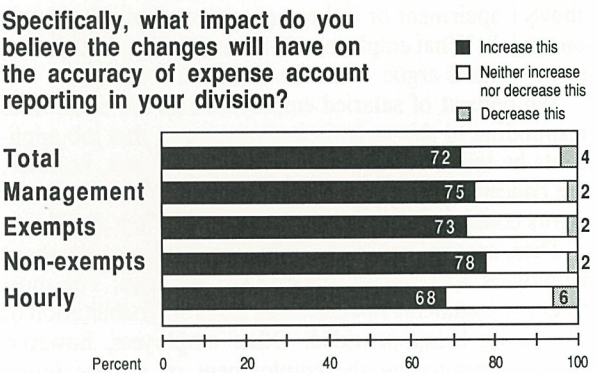
including changes in time card reporting and in expense account reporting.

Employees were asked whether they feel these changes were needed, whether they believe the changes will increase accuracy in expense account and time card reporting, and whether they believe the changes will increase Convair's efficiency, enhance customer confidence in the division, and strengthen the public's confidence in General Dynamics. Items within this section also explore employees' understanding of the changes that have been implemented.

Two write-in questions asked employees to offer comments on how they feel about the way changes are being implemented within Convair and whether they believe the changes are getting at the right issues and at the right levels.

Think back to the situation about a year ago. In your view, to what extent was change needed in business practices and administrative procedures?



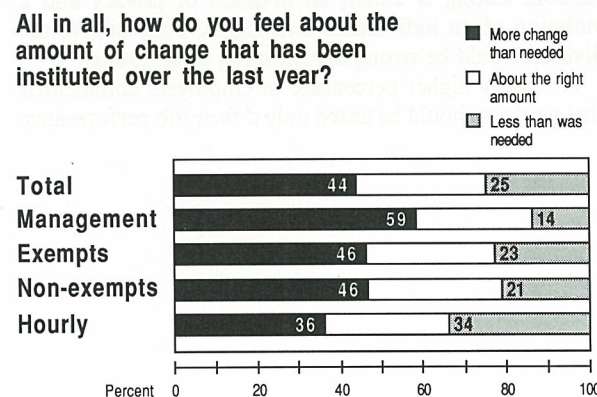
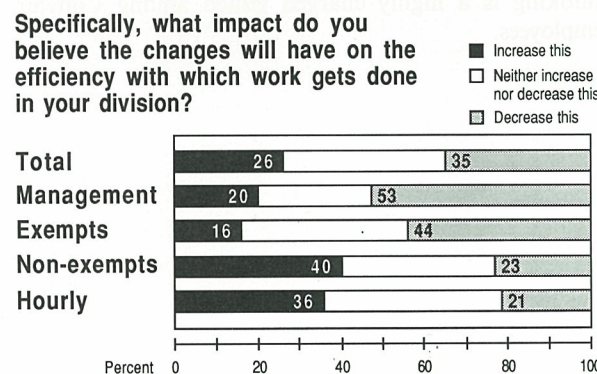
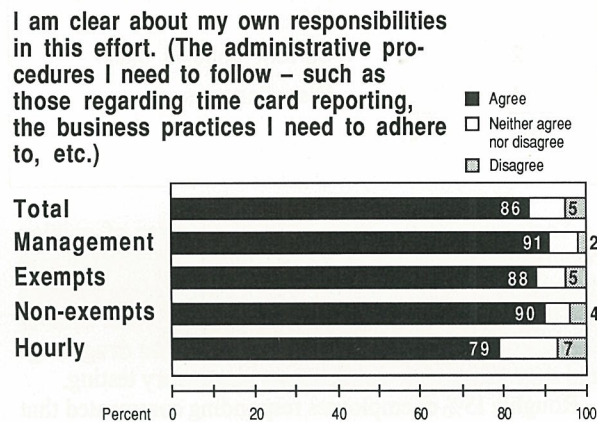
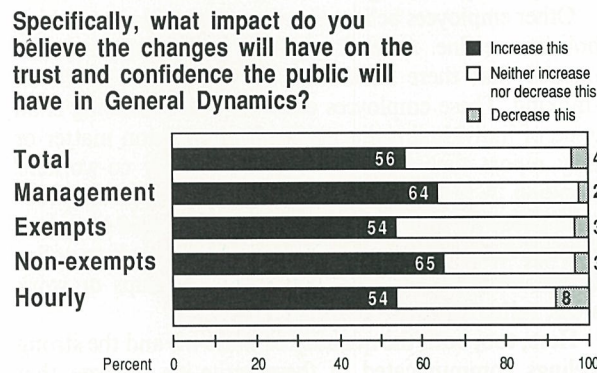
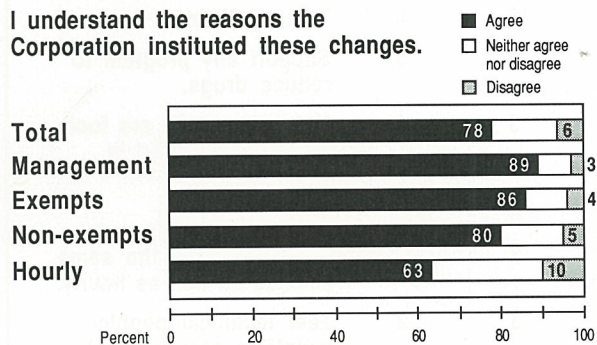
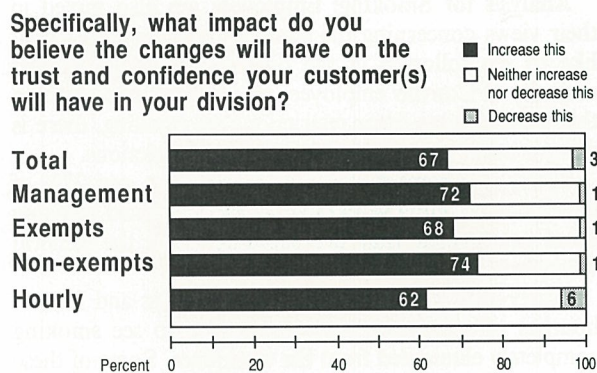


Were changes needed in the way the Corporation and/or your division did business? Are the changes getting at the right issues and at the right levels?

Salaried	Hourly	Major categories of comment
33 %	22 %	Changes needed at higher levels/more focus should be at top levels/lower level workers were not the problem.
19	33	Changes were needed/agree with need to make changes.
16	19	Changes are hitting the right issues/changes are hitting the right levels.
10	7	Changes not getting at the right issues/not getting at all the issues/cosmetic changes only.
7	9	Too much emphasis on time card recording.
5	3	Time charges were too loose/had been too many mischarges.
-	4	Not asking for employee input.
10	3	Miscellaneous.
100 %	100 %	

Comment on the way the changes are being implemented in your division.

Salaried	Hourly	Major categories of comment
23 %	27 %	Being implemented well/everyone stressing the changes/trying hard.
21	12	Lack of consistency in how changes implemented/keeps changing/too much confusion.
19	9	Overdone/overkill/decreasing efficiency.
13	8	Too much emphasis on time cards/time card checks out of hand.
11	16	Made to look like employees are the problems/changes seem to be aimed only at lower levels.
6	10	Implemented in one-way communication mode/not communicated well.
3	11	Don't see any change/no real change/little change has occurred.
-	5	Time card recording more accurate now.
4	2	Miscellaneous.
100 %	100 %	



Analysis for Business Practices: The vast majority of Convair employees feel that changes in business practices were necessary. They agree by an overwhelming margin that these changes will increase the accuracy of expense account and time card reporting.

Nevertheless, many Convair employees commented in response to write-in questions that less change should be focused on lower levels and more changes directed at higher levels. Further, significant percentages of employees offering comments feel that there's a lack of consistency in how the changes are implemented. Some employees describe the changes as "overkill" and others cite an excessive emphasis on time card checks.

Despite these misgivings, a strong majority of employees believe that the changes will improve the confidence that customers have in Convair and will enhance the trust and confidence that the public has in General Dynamics as a whole. But many employees are concerned about the impact these changes will have on efficiency. Significant percentages of all employee groups, including a majority of managers, believe that the changes will decrease the efficiency with which work is accomplished. Higher percentages of both non-exempts and hourlies, however, believe the changes will *increase* efficiency than believe efficiency will be decreased.

Seventy-eight percent of all Convair employees understand the reasons the Corporation instituted these changes. Even greater numbers of employees are clear about their own responsibilities in this effort.

Although the changes are viewed quite positively by all employee groups, there is disagreement about the *amount* of change that has been implemented. A majority of managers, along with considerable percentages of all other employee groups, feel there was too much change. Conversely, one-fourth of all employees feel not enough change was implemented.

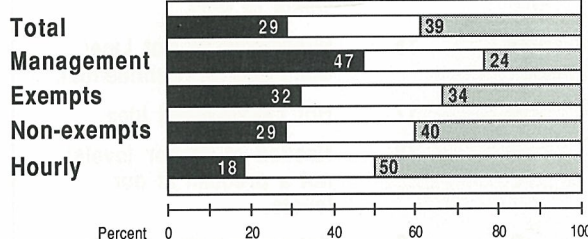
B. Business Ethics

Explanation: The seven items in this special issues area explore employees' perceptions of the business ethics of General Dynamics and of Convair. Employees were asked to compare the business ethics of General Dynamics today with its business ethics of a year ago, and to rate the current business ethics of Convair.

The effectiveness of the Hot Line and of the Ethics Awareness Workshops are rated under this heading, and responses to a write-in question provide additional insights into employees' views of these two efforts.

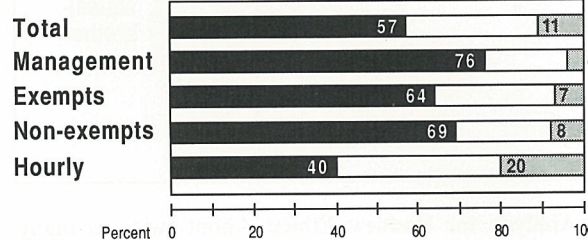
Think back to the situation about one year ago. All in all, how would you have rated General Dynamics - the corporation as a whole - at that time on being ethical in its business dealings?

■ Good
□ So-So
■ Poor



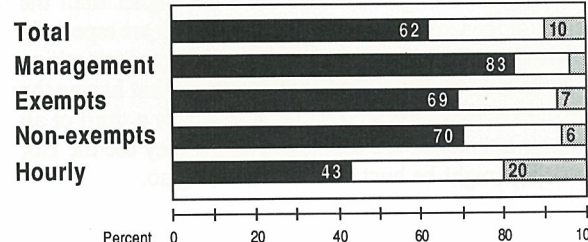
What would be your current rating of General Dynamics - the corporation as a whole - on being ethical in its business dealings.

■ Good
□ So-So
■ Poor

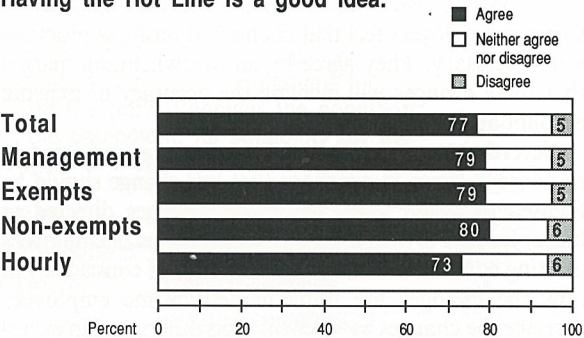


What would be your current overall rating of your own division on being ethical in its business dealings?

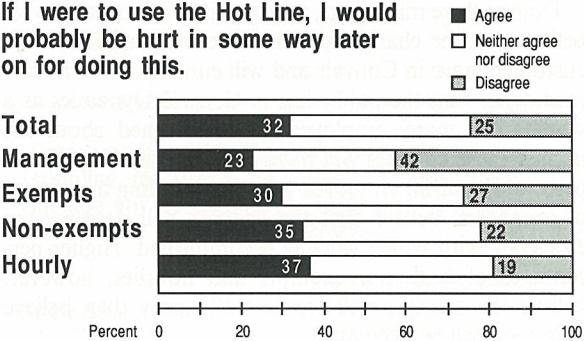
■ Good
□ So-So
■ Poor



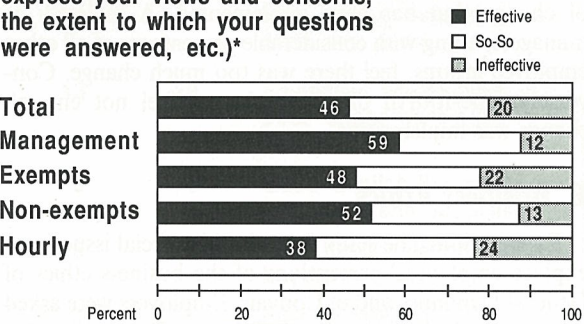
Having the Hot Line is a good idea.



If I were to use the Hot Line, I would probably be hurt in some way later on for doing this.



How would you rate the overall effectiveness of the Ethics Awareness Workshop you attended? (The clarity with which the information was presented, the opportunity you had to express your views and concerns, the extent to which your questions were answered, etc.)*



* Percent not attended an Ethics Awareness Workshop: Total - 22; Management - 11; Exempts - 10; Non-exempts - 18; Hourly - 42.

Comment on the Hot Line and the Ethics Awareness Workshops being conducted.		
Salaried	Hourly	Major categories of comment
20 %	16 %	Workshops useful/okay/informative.
20	10	Workshops not useful/waste of time.
12	15	Suspicious of Hot Line/don't feel it's confidential.
11	17	Hot Line a good idea.
9	15	Needed at higher levels/not a problem at our levels.
9	2	Not enough time for discussion in Workshop/no time to ask questions.
6	7	Not sure anything would be done if use Hot Line.
4	5	Don't like ratting, squealing on others/big brother is watching.
9	13	Miscellaneous.
100 %	100 %	

Analysis for Business Ethics: About twice as many Convair employees believe General Dynamics is ethical in its business dealings today than believed this was true a year ago. A strong majority of employees likewise give Convair a favorable rating in its business ethics. In fact, the division's ratings on ethics are a bit higher than the ratings of the Corporation overall. Managers are especially positive on the issues of both division and corporate ethics.

There is wide agreement within Convair that having the Hot Line is a good idea. Nonetheless, nearly a third of all Convair employees are concerned that if they use the Hot Line they might be hurt later on for doing so.

Convair employees are considerably less enthusiastic about the Ethics Awareness Workshops. Less than half of all employees overall have found the Workshops useful, and hourlies are the least favorable of all employee groups. In write-in items some employees explained that the Workshops do not allot enough time for discussion and for questions from employees. Greater numbers of employees commented that they do not believe the Hot Line affords employees sufficient confidentiality. And, echoing views expressed earlier, employees suggested that efforts such as the Hot Line and Ethics Awareness Workshops should be aimed at higher levels.

C. Drugs and Smoking

Explanation: Drugs, drinking and smoking are issues that concern Convair, General Dynamics, American corporations in general, and society at large. Therefore, the Corporation wanted employees' input and ideas regarding direction for its internal policies on these matters.

The response to the write-in questions regarding drug usage and smoking indicates that employees share the Corporation's concern. Higher percentages of employees contributed comments to the open-ended items about drugs and smoking than contributed to almost any other open-ended item contained in the survey. In total, about 70% of all General Dynamics employees who took this survey wrote in comments on drug usage and smoking. This contrasts to an average 50% response to other write-in items.

In your view, what should be the company's policies and practices in dealing with drug problems? (If your division has already implemented certain measures, your view of these and what additional actions - if any - you feel should be taken.)		
Salaried	Hourly	Major categories of comment
22 %	13 %	People should be tested/would accept mandatory testing.
14	18	Test only if job performance affected/only if use on the job/what's done on personal time not the company's business/only if suspected, test them.
14	15	Random drug testing unfair/no due process/no right to randomly test/against the Constitution.
12	13	Provide counseling/rehabilitation program/first time counsel employee.
10	8	Test applicants.
6	9	Support any program to reduce drugs.
5	6	Not sure results are fool proof/tests can be in error.
5	5	Terminate users.
3	4	Treat everyone the same, salaried as well as hourly.
3	2	Test technical people/people in security work, etc.
2	3	Current policies okay.
4	4	Miscellaneous.
100 %	100 %	

Analysis for Drugs: There is a divergence of opinion regarding what division policy should be in dealing with drug problems. Twenty-two percent of salaried employees and 13% of hourlies who offered responses to this write-in item believe that people should be tested for drug usage and they themselves would accept mandatory testing.

Roughly 15% of employees responding commented that random testing is unfair, an invasion of privacy and a violation of an individual's civil rights. They believe the division would be wrong in instituting drug testing.

A slightly higher percentage of employees commented that workers should be tested only if their job performance

shows impairment or if they are suspected of using drugs on the job. What employees do during their personal time, some workers argue, is not the division's concern.

Ten percent of salaried employees and 8% of hourlies responding to this write-in item suggested that job applicants be tested for drug use. Other employees, however, are concerned that drug tests are not foolproof and that errors could result in employees being unfairly penalized.

There are also varying views regarding what to do about employees who are found to be using drugs. The most frequent comments favored some form of rehabilitation or counseling being provided. Other employees, however, suggest terminating the employment of anyone found using drugs.

Both the quantity of the comments regarding drug use and the emotions contained in these comments indicate that drug use is an issue that employees feel General Dynamics should address.

What would you like to see the smoking policy in your division be? (If you work in a city or state where there already are laws pertaining to smoking, indicate what additional action - if any - you feel your division should take.)		
Salaried	Hourly	Major categories of comment
34 %	32 %	Eliminate smoking from workplace/prohibit smoking/no smoking inside facility/only outside.
31	27	Set up designated smoking areas/only in smoking areas/set aside separate place for smokers.
16	13	Current policy okay/how this division handles it is okay/leave as is.
6	3	Better ventilation is needed/inadequate ventilation is the problem.
5	4	It's a safety and health hazard.
4	5	Should be decided by work group/by individual areas.
3	12	No restrictions/it's a civil right/none of company's business/doesn't bother me.
1	4	Miscellaneous.
100 %	100 %	

Analysis for Smoking: Employees are also mixed in their views concerning the smoking policies they would like to see followed in the division. Although a vast majority of Convair employees who offered comments to this write-in item favor restrictions on smoking, there is disagreement about the extent of those restrictions.

Thirty-one percent of salaried employees and 27% of hourlies responding would like to see designated smoking areas established that are separate from the general workplace.

Thirty-four percent of salaried employees and 32% of hourlies offering comments would like to see smoking completely eliminated from the workplace. Some of these employees say smoking should only be permitted outdoors.

Other employees believe that Convair's current smoking policies are fine. A small percentage of employees commented that there should be no restrictions at all on smoking. These employees either feel that smoking is an issue of individual rights and is not a division matter or they report that they are not bothered by co-workers' smoking. A minority of employees suggest that the problems posed by smoking in the workplace could be solved through better ventilation. Others feel that smoking policy should be decided by individual work groups or work areas, rather than on a divisionwide level.

Here, too, both the quantity of write-ins and the strong feelings communicated in these write-ins indicate that smoking is a highly charged issued among Convair employees.

Summary of Convair Survey Findings by Sirota and Alper Associates, Inc.

The employee survey described in this Report was conducted exclusively by Sirota and Alper Associates, Inc. We have solely tabulated the results, analyzed the responses, and read the write-ins. No one within General Dynamics or the Convair division will see any individual's answer sheets. The analysis contained above was prepared by us and reflects our conclusions.

We find many of the same strengths and positives within the Convair division that we identified throughout the Corporation as a whole. Like their General Dynamics counterparts, Convair employees report that there are many areas where they believe the Corporation and the division perform well and where they would like to see current policies and practices continued.

Convair employees are proud to work for General Dynamics and proud to work for the division. Like their General Dynamics counterparts, Convair employees are very satisfied with the kind of work they do and they feel very good about their co-workers. They are pleased with the manufactured quality and the technical excellence of their products, though a bit less pleased than General Dynamics employees overall. Employees are also confident that their customers are pleased with the quality of Convair's products.

Supervisors are regarded as being technically competent; most Convair employees agree that they "know the job." Employees feel that the division maintains effective customer relations. And many employees perceive that the overall performance of the division had been getting better over the six months preceding the survey.

Employees are highly satisfied with the Corporation's profitability and optimistic about its future business prospects, although somewhat less optimistic than the total General Dynamics employee population. They are pleased with the division's profitability and also fairly optimistic with the division's business prospects. Here, too, however, Convair's ratings are somewhat below the ratings of other General Dynamics divisions.

Most employees believe that the Corporation is a good corporate citizen, taking a genuine interest in the welfare of the communities in which it has facilities.

As is true of a wide majority of all General Dynamics employees, the Convair workforce by and large sees substantial improvements in the perceived ethical business behavior of the Corporation. They believe the division is ethical in its business dealings. Employees feel, furthermore, that the changes made during the past year in administrative procedures such as time card reporting and expense account reporting were necessary. They strongly believe that the changes will lead to improvements in several areas, including inspiring greater trust and confidence among customers and among the general public. Nonetheless, many employees feel that changes should be directed at higher levels, and managers and exempts are concerned that the changes may decrease efficiency.

Benefits are rated favorably by Convair employees, and a bit more so than elsewhere in the Corporation. Salary is rated favorably when compared with the salary ratings given by employees in other American corporations. All employee groups, except hourlies, rate their job security favorably.

Consistent with our findings for the Corporation overall, many of Convair's key opportunities for improvement have to do with certain aspects of "getting the job done," including have decisions made on a timely basis, work organization, the efficiency with which work is accomplished, providing clarity of direction, and engaging in effective planning. In each of these areas, Convair employees report less favorable ratings than do General Dynamics employees overall. Furthermore, many employees feel that schedules and deadlines are not set realistically, which may contribute to the mixed ratings reported regarding the division's ability to meet product delivery schedules.

Physical working conditions and equipment are other areas where Convair employees cite dissatisfaction, as do General Dynamics employees overall. Exempts want improved access to computer systems; hourlies want higher quality tools and simplified procedures for obtaining replacement tools and parts.

Employees by and large are not pleased with their physical working conditions and list inadequate ventilation, temperature control and lighting; noise; dirt; safety hazards, and overcrowding as their chief complaints.

Another important strength we find within Convair is that employees feel a high performance level is expected of

them. Furthermore, they have a clear idea of the results expected of them on the job. Yet, like their General Dynamics counterparts, Convair employees feel that too little is done to correct poor employee performance. They also feel there is insufficient reward for excellent performance in terms of salary increases and promotions. Many hourlies do not feel they are treated as responsible adults, nor are they confident that management trusts them.

Generally, employees do not view management as a good listener. They are not strongly favorable regarding the oral communications skills of their supervisors, and many non-managers do not believe they can get a fair hearing for their complaints. Many employees also report that they lack understanding of the division *as a business*.

In summary, we see in Convair an employee population that likes its work, takes pride in the products it manufactures, and takes pride in working for the Corporation and the division. Convair employees are optimistic about the future, pleased, comparatively speaking, with salary and highly pleased with benefits. Generally, they are secure in their jobs.

Convair employees believe many improvements have been made during the last year in corporate and divisional administrative procedures. But improvements need to be made in the efficiency with which work is done, the extent to which pay and advancement reflect performance levels, physical working conditions, and equipment. Human relations, with hourly workers in particular, need to be strengthened.

Next Step in Survey by Dr. Marilyn Kistler, Convair Survey Coordinator

This report is the beginning of a series of events designed to feed back the survey data to all employees down to discrete organizational levels.

Convair's management team has been trained to facilitate the survey feedback process. In January, these facilitators will be presenting feedback sessions using the "unit managers" survey reports prepared by the consultants.

During these sessions, employees will have an opportunity to hear how their work group compares with division and Corporation results. Employees will then have an opportunity to participate with their management facilitators in developing action plans that will help to make the organization more effective and provide a satisfying work environment.

Some of the action plans will cover items that can be resolved within the employee's work group. Other action plans will be recommendations to a higher level of man-

agement for division staff or corporate level attention.

The plans will be reported up through Convair's management team to the General Manager. Convair's General Manager will report the division's action plan at a corporate executive meeting in the Spring. Following the corporate follow-up meeting another special edition of the *General Dynamics World* will be distributed to inform all employees of the status of the action planning process.

Your help is needed to participate in the definition of the problems and the planning needed to resolve them. Periodic reports on the status of the action plans will be published in both the *General Dynamics World* and the *Convair Weekly Log*.

If you have any questions during this process please contact the Convair Division Survey Coordinator, Dr. Marilyn Kistler, at 38049.

GENERAL DYNAMICS
Convair Division

Thunderbirds Thrilled 7.3 Million Persons In '86 Performances

The U.S. Air Force Thunderbirds aerial demonstration squadron performed for more than seven million persons in 1986, the team's fourth season flying Fort Worth-built F-16s.

By the end of the year, nearly 48 million persons had seen the Thunderbirds fly their Fighting Falcons since their first official show with the aircraft in April 1983.

The largest crowd at one Thunderbirds show in 1986 was in November at Edwards AFB, Calif., when 600,000 persons watched as the pilots performed high performance turns, rolls, precision formations and other maneuvers.

"The F-16 is providing the team with the flexibility to perform the air demonstration role while also maintaining a full combat capability," said Lt. Col. Roger Riggs, Commander of the squadron. Col. Riggs is in his second year with the Thunderbirds, and was previously F-16 Division Chief at the USAF Fighter Weapons School, Nellis AFB, Nev.

Thunderbirds aircrews maintain combat proficiency in air-to-surface tactics and air superiority maneuvers. The aircraft could be repainted and returned to combat configurations within 72 hours, Col. Riggs said.

This year, the team will fly approximately 80 shows at more than 70 sites in the continental United States and abroad. Exact dates and locations for the 1987 season will be announced in the spring.

The F-16 was selected as the Thunderbirds' aircraft in 1982. The Thunderbirds have flown six different aircraft types in the squadron's 34-year history and have performed more than 2,750 official aerial demonstrations for nearly 202 million people.

Major Training Efforts Progressed Very Well in 1986

Two major corporatewide training efforts progressed very well in 1986, according to Kent Druyvesteyn, Corporate Ethics Program Director.

"Two kinds of training have been occurring corporatewide aimed at increasing awareness of business conduct issues and emphasizing improvement in administrative performance," Druyvesteyn said.

"One kind of training concerns the Standards of Business Ethics and Conduct and its broad application to everyday business decisions," he said. "The aim of this kind of training is to heighten awareness of the potential ethical dimension of normal business practice."

Druyvesteyn said the other kind of training concerns specific areas of business performance which are broadly related to the Standards. "The aim of this training is to provide specific skill or knowledge which shapes daily performance and which ultimately supports the fulfillment of the Standards and the achievement of zero defect administration," he said.

The following table summarizes the various corporatewide training activities conducted through the end of 1986 and the progress made in each activity through Dec. 5th.

Training Activity	Target Population	Percent Complete
Ethics Awareness	99,670	98.7
Revolving Door	230	100
New Business Funds	3,485	100
Labor Reporting	83,699	95.7
Expense Reporting	30,401	100

Contract Is Awarded

Convair has been awarded a \$16 million research and development contract from the Defense Advanced Research Projects Agency for the air vehicle avionics intelligent munitions program (smart munitions).

General Dynamics was one of seven companies awarded contracts to study development of artificial intelligence and strategic computing for a variety of air vehicles and munitions to support the next generation of autonomous weapons. The work will be performed jointly by the Convair, Fort Worth, Pomona and Valley Systems divisions.

GENERAL DYNAMICS

World

Volume 17 Number 1

January 1987

Fleet Satellite Communications Spacecraft Boosted into Orbit by Powerful Atlas/Centaur

A General Dynamics Atlas/Centaur temporarily turned night into day with a fiery lift-off from Cape Canaveral at 9:30 p.m. on Dec. 4th.

It successfully boosted a Fleet Satellite Communications (FLTSATCOM) spacecraft into orbit, ending the year on an upbeat note for NASA, the Navy, Air Force and Space Systems Division.

The spectacular night launch was visible to crowds of Central Florida residents and tourists who lined the public viewing areas.

At lift-off, the 138-foot-tall vehicle, Atlas/Centaur-66, weighed 360,500 pounds. Four minutes after lift-off, the Atlas booster separated from Centaur, 276 miles down-range, and the first of two Centaur "burns" occurred to place the vehicle into an elliptical parking orbit, where it coasted for about 14 minutes.

As the vehicle made its first pass over the equator, the Centaur reignited for the second "burn" to accelerate the spacecraft into a 19,324-nautical mile geosynchronous transfer orbit.

"This launch was critically important to the Navy," said Dennis Dunbar, Space Systems Division Atlas/Centaur Program Director. "It was vitally important to NASA to regain momentum lost with the shuttle tragedy earlier this year and vitally important to General Dynamics to show our potential customers that we can deliver."

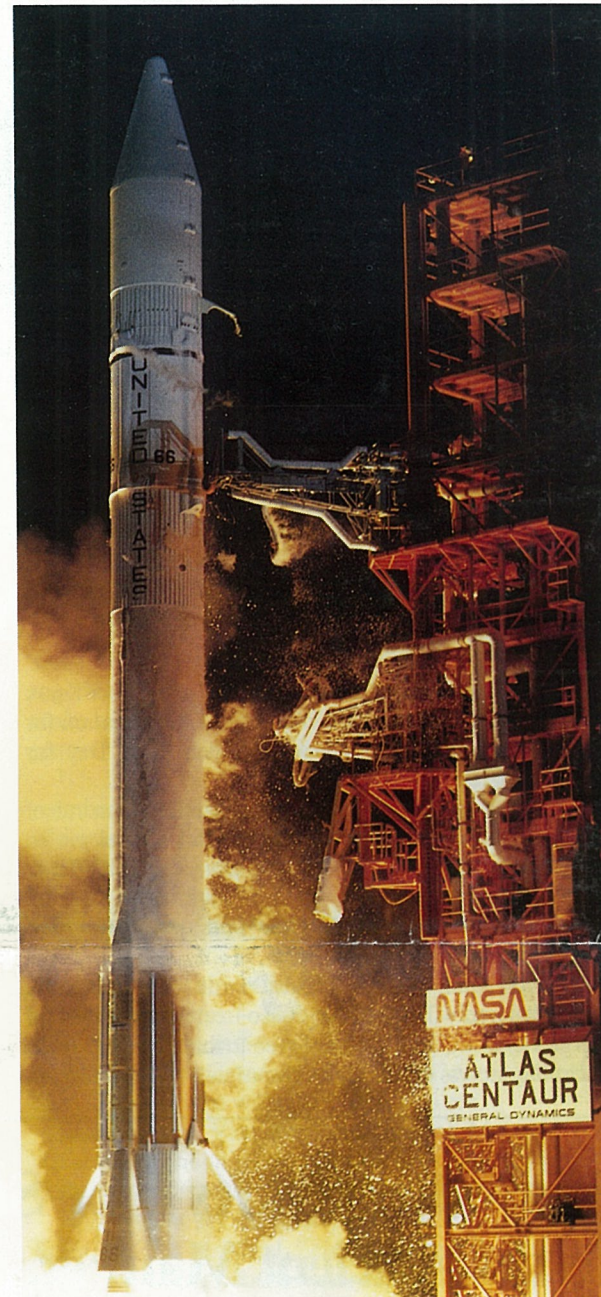
Atlas vehicles accounted for three of the five successful launches in 1986, a year that otherwise was marked with frustration and disappointment for NASA and space-related industries.

Atlas G/Centaur, the latest and most powerful of the Atlas/Centaur family, was built in San Diego and launched by a joint General Dynamics/NASA team at the Eastern Space and Missile Center.

FLTSATCOM F-7 was the largest payload ever launched to geosynchronous orbit by Atlas/Centaur. It will connect high-ranking military commanders, including the President, with all of the country's deployed fighting forces, whether on land, at sea or in the air. It is the Navy's primary communications system for day-to-day fleet operations.

Over the last eight years, Atlas/Centaur has boosted six FLTSATCOM spacecraft into orbit. Two more will be launched in 1987.

(See related story on Page 5)



Atlas/Centaur-66 Lifts Off from Cape Canaveral

Greece Will Receive Forty Fighting Falcons

General Dynamics has signed a formal agreement with the Hellenic Air Force providing Greece with 40 F-16 Fighting Falcon multimission jet fighter aircraft.

The first F-16 for the HAF is scheduled to be delivered from the company's Fort Worth, Texas, division in October 1988, with subsequent deliveries during the next 12 months.

The Greek F-16 program, under a commercial contract between General Dynamics and the HAF, was initiated in April 1986.

The formal agreement, which was signed Jan. 12th, includes provisions for fulfillment of General Dynamics' offset obligations under the sale. Coproduction of portions of the F-16 is also an available option under the agreement. Final assembly of the aircraft will be accomplished at Fort Worth.

The agreement was signed in Athens by Lt. Gen. Nicholas Stapas, Chief of the Hellenic Air Force, and D.

Blaine Scheideman, Vice President of Contracts for Fort Worth.

"One of the major points of this agreement is that General Dynamics, General Electric and the Westinghouse Electric Company have committed to establish a \$50 million business development company in Greece," Scheideman said.

"We fully intend to develop industries in Greece that will be able to compete in the world marketplace," he said. "We feel this is a very important part of the agreement, one that will pay great dividends for the Greek economy for years to come."

General Electric will provide engines for the aircraft and Westinghouse will furnish the radars.

The F-16 is currently being flown by the air forces of 10 nations from 35 bases around the world. About 1,700 F-16s have been delivered to date. The aircraft also is on order with four other countries, in addition to Greece.

F-16 Fleet Surpassed Its One Millionth Flight Hour in 1986

The U.S. Air Force recorded its one millionth F-16 flight hour in late 1986.

Maj. Gen. Mark Anderson, Deputy Chief of Staff for Operations at Tactical Air Command Headquarters, Langley AFB, Va., logged the service's one millionth F-16 flight hour during a familiarization flight from Homestead AFB, Fla., on Dec. 19th.

General Anderson was the front-cockpit pilot in F-16B No. 114. In the rear cockpit was Lt. Col. Randy Scott, instructor pilot and Assistant Operations Officer for the 309th Tactical Fighter Squadron, 31st Tactical Fighter Wing.

The aircraft was part of a flight of two F-16s and two F-4s from the 31st TFW on an intercept training mission.



United Way Award. Space Systems General Manager Dr. Alan Lovelace, Data Systems Division-Western Center Director Paul Cofoni and Convair General Manager John McSweeney (left to right) recently were presented "Top Gun" awards from United Way's James Greene (far right) for exceptional support among Pacesetter companies of the 1986 United Way drive in San Diego. The Convair employee Con-Trib Club comprising the three divisions, along with the Electronics Con-Trib Club and the DatagraphiX Con-Trib Club, pledged more than \$1.5 million to United Way/CHAD in San Diego for 1986. McSweeney and Mel Barlow, Electronics General Manager, also served as volunteer executive organizers for the campaign.

Mary Johnson Honored by Army at Fort Knox

Mary Johnson, Field Office Assistant in the Fort Knox (Ky.) Office, has received a Certificate of Appreciation for her support of the Army base's Golden Field Day for special athletes.

Maj. Gen. Thomas H. Tait, Commanding General of Fort Knox, presented the certificate and a lapel pin to Johnson at a reception in her honor at the base's Officers' Club in December.

The certificate reads:

"For exemplary community service in support of the 1986 Fort Knox Golden Field Day II. Ms. Johnson's dedication and willingness to give so freely of her time and energies directly and materially contributed to the overwhelming success of this major community event. Through

her coordinated efforts, over 750 special athletes from Fort Knox and Bullitt, Hardin and Meade counties were provided a rewarding and personally fulfilling experience which had a significant impact on both the athletes and their families. Additionally, the community's awareness and acceptance of handicapped persons were greatly enhanced, resulting in renewed pride in the Fort Knox Community as a whole. Ms. Johnson's personal concern for the commitment to the special needs of exceptional family members of the Greater Fort Knox Community reflects great credit upon herself, her family and Fort Knox."

Fort Knox is a key customer for the M1A1 tank and related product lines.

Showalter Crafts Fine Stringed Instruments In the Ancient Manner, with Much Patience

Convair's Len Showalter is an expert at keeping complex video and sound equipment in peak condition in his job with the division's Motion Pictures and Television department.

When he leaves the high-tech world of the video studio and steps into his garage workshop, however, he picks up the ancient tools of the woodworker — chisels, gouges, planes and peg reamers — to work on handmade stringed instruments, painstakingly carved and beautifully finished.

Showalter first became interested in playing and then making a violin because his daughter was taking violin lessons. To date, he has completed four violins, two violas, an Irish folk harp and a Paraguayan folk harp. He is now working on a cello.

Showalter starts with plans and a block of wood. First, he said, he makes the mold for the "rib garland," which defines the basic shape of the instrument. He then begins carving the top, back, neck and scroll.

Hundreds of hours later, he is ready to fit the pegs and string the instrument so that he can begin testing it for sound.

"If it doesn't sound right, you adjust the instrument in several ways by changing the bridge, moving the sound post or carving away additional wood," he said. He knows where to carve by his "good ear," a few scientific tests and experience.

A violin takes about 400 hours to make. The cello will probably take about 500 hours — "plus a lot more blisters," according to Showalter. "You actually end up throwing away most of the wood during the carving," he said.

The final process that gives the instrument its rich finish is the application of up to 10 coats of handrubbed varnish. Showalter is a member of the Southern California Association of Violinmakers and the editor of its newsletter. He has sold one of his violins but prefers to keep the instruments he makes.

His main enjoyment is playing string quartet music with friends on the viola he made, he said. During the Christ-



Violinmaker Len Showalter Tunes the Viola He Made

mas season, he joined the San Diego Mid-City Community Orchestra to perform concerts at area churches and hospitals.

Showalter has worked 25 years in industrial television production at Convair and also wrote a textbook on the subject of closed-circuit TV. He was also responsible for installing the 100-camera system at Cape Canaveral's Apollo launch complex.

Navy Assigns Names To Three Submarines Under Construction

The U.S. Navy has assigned names to three more SSN 688-class fast-attack submarines under construction at Electric Boat.

The SSN 754 has been named *Topeka*, after the capital of Kansas, the SSN 755 will carry the name *Miami*, after the Florida city, and the SSN 757 will honor *Asheville*, the city in North Carolina.

All three vessels are the first submarines to bear their respective names.

Topeka is the third U.S. Navy ship to have the name. Her predecessors were a steamer acquired during the war with Spain in 1898, which was converted to a gunboat, and a light cruiser (CL 67), later converted to a guided missile cruiser (CLG 8). Commissioned in 1943, the second *Topeka* earned two battle stars in World War II and three in the Vietnam conflict.

Miami is also the third Naval ship to bear the name. She follows a sidewheel gunboat which saw service in the Civil War and the light cruiser CL 89, commissioned in 1945, which earned six battle stars in World War II.

Asheville has three predecessors. The first, a patrol craft which was commissioned in 1920, served with the Special Service Squadron and the Asiatic Fleet and was sunk in 1942. She earned one battle star for World War II service. The second, a frigate which performed wartime convoy duty, served from 1942 to 1946. The third, a gas turbine gunboat (PG 84) commissioned in 1966, earned 14 battle stars for service during the Vietnam conflict.

Land Systems Foreman Earns Heroism Medal

A Land Systems foreman from the Lima Army Tank Plant recently received a Carnegie Medal and a \$2,500 prize for what the Carnegie Hero Fund Commission called "an outstanding act of heroism."

Daniel R. McKercher, of Quality Control, was one of 21 persons from 12 states and three Canadian provinces awarded the internationally recognized honor for heroism.

McKercher's lifesaving actions occurred on May 12, 1985, near Anna, Ohio, when he saw a tractor-trailer run off the road, strike a guardrail, burst into flames and fall 15 feet into a creek bed.

Rushing to the scene, McKercher broke the windshield and extinguished some of the flames in the cab. He then bent the driver's door away from the cab, pulled out Marita G. Wilson and dragged her to safety as the flames and heat increased. McKercher helped another man pull Herman W. Wilson from the cab just before it became enveloped in fire.

Mrs. Wilson sustained third-degree burns and other serious injuries, but survived. Her husband died of his burns the next day.

The Carnegie Hero Fund Commission reviews from 700 to 1,000 cases annually and selects about 10 percent for medal awards.

Fort Worth Praised For Blood Donations

Fort Worth was cited recently by the American Association of Blood Banks (AABB) for outstanding activity in support of voluntary blood donations for the community blood supply.

Additionally, the corporation was added to the AABB's Corporate Honor Roll, which is described as "a gold star listing of companies that sponsor donor programs with at least 25 percent participation by their employees as a result of management support of the concept of voluntary blood donation."

"Your organization has shown a generosity matched by few businesses," said Dr. Eugene M. Berkman, President of the AABB.

The awards were announced during the association's 39th annual meeting in San Francisco. Sue Evans of Human Resources, who coordinates Fort Worth's quarterly blood drives with the Amon Carter Blood Center, accepted the awards on behalf of General Dynamics.

For the last decade, employees at Fort Worth have voluntarily donated about 10 percent of the blood collected by the Carter center for use in the community's hospitals.

"The Fort Worth Division has demonstrated its commitment to providing such a service in the community and its efforts are sincerely appreciated," Dr. Berkman said.

Cruise Missiles Pass Two Important Tests In Launches at Sea

Two important milestones have been reached in test flights of the Convair-built Tomahawk cruise missile. In a test conducted Nov. 21st at the Naval Weapons Center China Lake Test Range in California, Tomahawk demonstrated a new land-attack capability. The test was the first flight of the production configured submunitions-dispensing variant, which is under full-scale engineering development by Convair.

Seconds after launch from USS *Arkansas*, under way off the coast of Southern California, the missile transitioned to cruise flight and flew a fully guided land-attack mission of approximately 500 miles inland to the China Lake Range. The missile carried a full load of submunitions made up of 24 packs containing seven combined effects bomblets (CEBs) each. At the China Lake Range, the missile successfully engaged multiple targets with the inert CEBs.

The test was one in a series of developmental flight tests of the Tomahawk land-attack missile with the submunitions dispenser. This variant of the Tomahawk weapon system will increase mission versatility by enabling a single missile to attack multiple targets such as revetted aircraft or air defense installations. Approximately 30 percent of the Navy Tomahawk cruise missiles will be the submunitions variant.

Tomahawk successfully completed another critical milestone in a test flight on Nov. 26th when it was vertically launched for the first time from a submerged submarine. Previous vertical launches had been from an underwater rig. The antiship missile flew 250 nautical miles, passed within lethal distance of a target hulk and was recovered. This variant will give submarines a vertical launch capability for Tomahawk in addition to a torpedo launch capability. This was the first of seven flights in the transition to production.

Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	Nov. 1984	Nov. 1985	Nov. 1986
Salaried			
Government Bonds	9.5 %	15.0%	11.8%
Diversified Portfolio	(1.0)%	33.5%	30.1%
Fixed Income	12.3%	12.5%	12.0%
Hourly			
Government Bonds	9.5 %	15.0%	11.3%
Diversified Portfolio	(1.6)%	33.1%	30.7%
Fixed Income*	N/A	12.4%	12.1%
GD Stock Closing Price	\$65.88	\$68.37	\$74.00

* Fixed Income effective 6/30/85

Electric Boat Designs Trident Training Labs

Electric Boat has begun work on a project to design 25 training laboratories for the Trident Submarine Base which is now being constructed at King's Bay, Ga.

Under a \$17.5 million contract from the Naval Sea Systems Command, Electric Boat will design 24 labs for the Trident Training Facility and one for the base's Refit Facility. The contract also provides for the procurement of equipment and components for the laboratories and has options for installation and testing of the equipment.

The project will continue for four years at Groton, at Electric Boat's Atlanta engineering office and at King's Bay.

The division performed similar work for the Trident base in Bangor, Wash.



Navy's Newest Trident. The Trident submarine *Tennessee* floats in the land level graving dock at Electric Boat during her christening ceremonies.

Trident Called 'Best Deterrent' at Christening Of Electric Boat-Built Submarine Tennessee

The Commander in Chief of the U.S. Navy's Atlantic Fleet called the Trident submarine "the best deterrent we know how to build" during christening ceremonies Dec. 13th for *Tennessee*, the ninth ship in her class, at Electric Boat's Groton, Conn., shipyard.

"I can assure you this event will not go unnoticed," said Adm. Frank B. Kelso II at the christening.

He told the 1,000 guests and spectators on hand at the division's land level construction facility graving dock: "For this ship . . . is the lead ship of the most powerful deterrent our nation has ever put to sea."

Admiral Kelso was referring to the fact that the *Tennessee* (SSBN 734) is the first of her class designed from the keel up to carry the Trident II (D-5) missile, which has a significantly greater range and payload capability than the Trident I (C-4) missile currently carried aboard the other powerful ships of the *Ohio* class.

"So today," Admiral Kelso said, "we witness, with the launch of the *Tennessee*, the final step in the modernization of the submarine leg of our nation's strategic triad."

The admiral said the Trident is "a very quiet submarine with a long range, accurate missile, capable of operating undetected in vast ocean areas. Unseen, unheard, yet always available."

"The creation we see before us and will watch develop," he continued, "is a reflection of the great industrial capability of our nation. It is a true reminder that we, the American people, have the know-how, the skill and the will to deter aggression and to continue to stand for those freedoms we cherish."

Admiral Kelso called the christening "a glorious beginning. . . Much work remains to be done before we will see the stars and stripes flying from the flag staff of *Tennessee*."

see. . . From now on it is shipbuilder and crew pulling together to give this magnificent marvel the life that will make her a ship. . . Today the *Tennessee* begins its historic journey to add a new capability to maintain world peace."

U.S. Senators Albert Gore Jr. and Jim Sasser, both members of the *Tennessee* Congressional delegation, also addressed the gathering. Senator Gore called the christening "truly significant" because it marked the era of the new missiles, while Sasser said the *Tennessee* would help maintain world peace and "deter Russians around the world."

General Dynamics President Oliver C. Boileau said he wanted "to acknowledge the fine job being done by an outstanding team — a team that includes our Electric Boat employees, our suppliers, the Navy's Supervisor of Shipbuilding in Groton and all those wearing the U.S. Navy uniform who will take this ship to sea."

Electric Boat Vice President-General Manager Fritz Tovar called the ship "the culmination of several years of skilled and dedicated work."

Highlight of the ceremony came when Mrs. Landess Kelso, wife of Admiral Kelso, smashed the traditional bottle of champagne on the after edge of the superstructure of the *Tennessee*. "I christen thee *Tennessee*," Mrs. Kelso said. "May God bless her and all who sail in her." That was followed by a long blast on the ship's whistle and the time honored strains of "Anchors Aweigh" by the Navy Northeast Band.

Also participating in the ceremony were Robert Sims, Assistant Secretary of Defense for Public Affairs; Tennessee Sixth District Congressman Bart Gordon; Vice Adm. Daniel L. Cooper, Commander, Submarine Force, U.S. Atlantic Fleet; and Major General Carl Wallace, Adjutant General of the State of Tennessee.



Trident Christened. Mrs. Landess Kelso, sponsor of the Trident submarine *Tennessee*, smashes a bottle of champagne against the after edge of the ship's superstructure as her husband, Adm. Frank B. Kelso II, tries to avoid being doused.

GENERAL DYNAMICS

World

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Manager of Internal Communication: Edward D. Williams

Contributors: Julie Andrews, Jim Gilkerson,
Dean Humphrey, Jack Isabel, Jerry Littman,
Karl Oskoian, Jack Price, Jim Reyburn, Tom Rule,
Joe Stout, Z. Joe Thornton

Joseph M. Pennisi Named VP/Program Director-RAM For Valley Systems

Joseph M. Pennisi has been named Division Vice President and Program Director-Rolling Airframe Missile (RAM) and Launcher Systems at Valley Systems.



Pennisi

Pennisi, 43, had been Program Director-RAM since 1983 and will continue to be responsible for engineering development, production transition and production of the system.

Pennisi joined Pomona in 1963 and has held various positions in the Engineering Department, including design engineer, design specialist and project engineer.

In 1978 he was promoted to Assistant Program Director, responsible for Standard Missile product design. He became chief engineer and technical director for the Standard Missile program in 1981.

He holds a bachelor's degree in mechanical engineering from California State Polytechnic University, Pomona, and a master's degree in mechanical engineering from Purdue University.

Charles H. Lloyd Named Vice President/Controller For Space Systems

Charles H. Lloyd has been appointed Division Vice President and Controller at Space Systems.

Lloyd, 36, served as Division Vice President of Administration and Controller at General Dynamics Services Company in St. Louis since 1984. He joined the Corporate Office in 1980 as Manager of Financial Planning-Aerospace and was named Corporate Director-Financial Planning in 1981.



Lloyd

He holds a bachelor's degree in finance from Virginia Polytechnic Institute and a master's degree in finance from the University of Michigan.

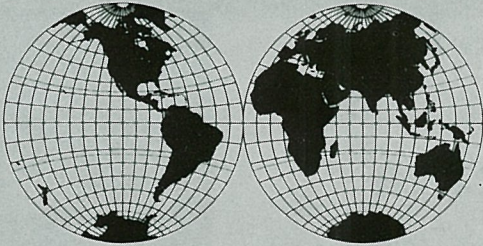
Contract to Pomona

Pomona has been awarded a \$338.8 million firm fixed-price contract from the Naval Sea Systems Command for Standard Missile-2 Block II guidance control and airframe sections.

The work will be performed at Pomona and the Navajo Facility in Window Rock, Ariz., and is scheduled to be completed in 1988.



Savings Bond Drawing. Uncle Sam receives a helping hand from Gail Small, Material Finance, in the drawing at the Sterling Plant for prize winners in the 1986 U.S. Savings Bond campaign at Land Systems. Annual purchase of Savings Bonds increased 40 percent, from \$3.1 million to \$4.4 million, as a result of the 1986 drive. Donald G. Norman, Land Systems Vice President-Human Resources, who was Uncle Sam, made prize-drawing trips to all major Land Systems facilities.



Around the World

CHQ: James J. Ortyen joined as Planning Specialist . . . William L. Smith transferred from the Pomona/Camden Facility and was promoted to General Accounting Manager . . . John V. Leonard Jr. transferred from Electric Boat and was promoted to Supervising Senior Subcontract Auditor . . . Hugh V. Lennon transferred from DSD/Eastern Center and was promoted to Senior Subcontract Auditor . . . John V. Ostrowski transferred from DSD/Eastern Center and was promoted to Information Systems Auditor . . . Molly V. Roether was promoted to Corporate Manager-Investor Relations . . . Rudolph Romero to Corporate Manager-Los Angeles . . . Jeffrey D. Cerny to Corporate Director-Land Systems . . . William W. Maurer to Corporate Director-Legislative Affairs . . . Dennis L. Arens to Corporate Network Manager . . . John S. Barkley to Senior Subcontract Auditor.

Fort Worth: John L. Evans and Raymond K. Pilon were appointed to Quality Assurance Director . . . Louis M. Pisz to Quality Assurance Director-Field Operations . . . Mark W. Aitken and Howard J. Ratliff Jr. were promoted to Senior Field Engineer . . . Lela M. Alcorn to Senior Engineering Change Analyst . . . Tony E. Arwood and Laymon D. Rolfe to Logistics Engineer . . . Robert H. Austin, Floyd R. Decker and Sherry G. Thorp to Manufacturing Control Supervisor . . . Archie R. Baker to Chief of Finance . . . Byron G. Benard and Donald R. Elmore to Chief of Logistics . . . Willard B. Bennett to Senior Project Engineer . . . Wellon K. Brenner to Manufacturing Support Equipment Specialist . . . Donald R. Brown, William R. Newton and Robert W. Manney to Engineering Manager . . . Ronald E. Burns to Field Service Engineer . . . William R. Burton and Robert L. Weese to Estimating Chief . . . Michael Casey and James A. Swan to Logistics Supervisor . . . Tommy L. Chitwood and James E. Davis to Tooling Supervisor . . . William M. Coffman Jr. to International Coproduction Chief . . . Raymond D. Coker, James D. Franklin, Billy S. Gibbs and Keith D. Lunsford to General Foreman . . . William P. Cromie to Principle Field Service Engineer . . . Arthur E. Divine to Industrial Engineering Specialist . . . Odis E. Dixon, Alda F. Hawkins, David W. Tucker and Michael L. Stanley to Product Management Specialist . . . Kevin J. Dunleavy to Program Specialist . . . Michael J. Eagleston to F-111 Planning & Control Manager . . . Gregory P. Fox and John R. Hall to Senior Field Supply Analyst . . . Charles L. Hagler to Logistics Group Engineer . . . Ross M. Hatch to Senior Program Analyst . . . James P. Knox to Senior Technical Publications Editor . . . Bruce E. Larance and Geoffrey H. White to Logistics Group Supervisor . . . Judith A. Lorimer to Senior Engineering Administrative Assistant . . . Michael G. Magriplis and Herman W. Norman to Inspection Supervisor . . . Bruce D. Myers to Material Supervisor . . . Lowell L. Roberts to Transportation, Traffic & Sanitation Manager . . . Frank L. Saffarrans Jr. to Project Engineer . . . Alma J. Shackelford to Engineering Specialist . . . Randall L. Sharp to Manufacturing Control General Supervisor . . . Jessie J. Tamplin to Manufacturing Engineering Specialist . . . John W. Turpin to Senior Traffic Operations Specialist . . . Charley V. Van Doren to Assistant Project Engineer.

Electric Boat: William E. Graber was appointed to Director of Radiological Control . . . John Cummings was promoted to Test Chief . . . Emil Selent to Chief Nuclear Test Engineer . . . James Bell to Chief Test Engineer . . . Joseph Baich to Superintendent . . . John Donahue, William Lennon and William Shaffer to Assistant Chief Nuclear Test Engineer . . . Carl Eldredge to Assistant Chief Refueling Engineer . . . Franklin Burnell and Barry Donch to Design Supervisor . . . Henry Coatsworth and William Corrigan to Test Operating Engineer . . . Michael Francis to Purchasing Agent . . . Brian Buard, Harold Swanson and Ronald Young to Engineering Supervisor . . . Geraldine LeBlanc to Logistics Support Supervisor . . . John Bullock, Brian Canavan, James Feraco, Sheryll Holzapfel, John Lossing, James Maine and Wayne Mainville to Foreman.

Electronics: Bridget M. Nickodemus was promoted to Marketing Representative . . . Gary C. Winters to Human Resources Manager.

Space Systems: Andrew L. Keller was appointed to Engineering Business Management Director . . . Robert A. Cox was promoted to Engineering Chief . . . John W. Erickson and George J. Vegter to Senior Engineering Specialist . . . F. Bruce Hamen to Finance Chief . . . Dave Hernandez to Drafting Supervisor . . . Amy J. Koon to Drafting Chief . . . Steven K. Saiget to Offset Procurement Manager . . . Leonard W. Springer to Engineering Administration Manager.

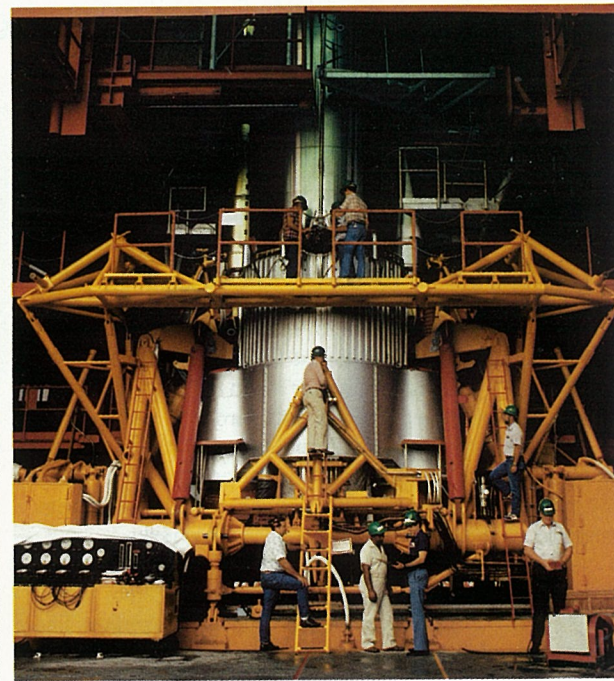
Convair: Norman Pearl has been appointed to Fabrication and Tooling Director . . . Ronald L. Cogbill and Christopher H. Dahl were promoted to Publications Supervisor . . . Bill A. Fitzpatrick, Steven M. Martin and Dan T. Trew to Financial Supervisor . . . John E. Hoskins to Manufacturing Control Operations Supervisor . . . Shirley M. King and Trevor Martin to Logistics Supervisor . . . Bruce H. Marshall to Quality Assurance Administration Manager . . . Jan F. Lundy-Iufer to Publications Chief . . . Joseph L. Mortenson to Master Scheduling Supervisor . . . John R. Payne to Manufacturing Control General Supervisor . . . Garret D. Quackenbush to Engineering Chief . . . Jay D. Stroh to Manufacturing Engineering Manager . . . Wanda M. Wright to Accounting Supervisor . . . Carol L. Wightman to Procurement Chief.

Land Systems: Nicholas L. Moustakas was promoted to Financial Specialist . . . Sharon M. Cooper to Senior Financial Analyst . . . Ronald J. Tarnowski to Financial Analysis Supervisor . . . Robert A. Paulisin to Chief Administrator . . . Edward Bayline to Program Management Chief . . . Philip F. Shibley to Engineering Services Chief . . . Gustav L. Nicaise to Quality Control Engineering Supervisor . . . Thomas A. Staza to Quality Assurance Chief . . . Lawrence G. Berthiaume to Quality Assurance Engineering Supervisor . . . Phillip S. Sardo to Production Control Supervisor . . . Thomas V. Burgess to Maintenance Superintendent . . . Mark A. Bender and Mark B. Schoenherr to Senior Program Administration Analyst . . . James L. Lillibridge to ILS Field Operations Supervisor . . . David L. Turner to Program Administrator . . . John R. Rayland to Production/Material Control Manager . . . Mahendra J. Jani to Engineering Supervisor . . . Richard A. Foster to Chief Material Finance.

Pomona: Fred G. Acosta, Raymond E. Colling and Mohamed A. Elgaber were promoted to Engineering Section Supervisor . . . Jo A. Brandt, Willie C. Dunigan, John R. Keala, Regina E. Stice and Johnny B. Wyatt to Senior Cost Control Analyst . . . Gerald T. Burden to Group Engineer . . . James L. Burns to Quality Assurance Project Engineer . . . Patricia R. Farley to Senior Accounting Specialist . . . Hector A. Gallardo to Technical Writer Specialist . . . Richard D. Hall to Project Coordinator . . . Loretta F. Jackson and Sandra J. Woolsey to Senior Manufacturing Engineer . . . Marilyn G. Martin to Design Specialist . . . Michael J. Metz to Manufacturing Development Specialist . . . Arthur R. Stockdale to Project Administrator . . . Marianne P. Virant to Senior Technical Writer . . . Eva G. Bazzarre to Proposal Development Administrator . . . Michelle L. McNair to Quality Assurance Representative . . . Homer A. Mosley to Logistics Specialist . . . Kim R. Reh to Assistant Project Engineer . . . Wayne E. Shuey to Senior Property Auditor . . . Harold L. Telford to Configuration & Data Management Specialist . . . Eugene F. Thomas to Accounting Chief.

Valley Systems: Steven L. Larkins was promoted to Industrial Accounting Manager . . . Stephen R. Killion and David D. Coburn to Project Administrator . . . Randy W. Copleman to Group Engineer . . . Jon E. Gunderson to Cost Control Manager . . . Billy J. Middleton to Estimating Manager . . . Kent R. Porter to Hourly Personnel Manager . . . Frank F. Delgado to Labor Relations and Employment Chief . . . Richard H. Swetnam, Gordon A. Nesbitt II and Julie R. Nesbitt to Logistics Specialist . . . Michael W. Ressel to Skills Training Chief . . . Richard L. Wooton to Quality Assurance Project Administrator . . . William P. Hargreaves Jr. and Robert A. Balslev to Project Engineer . . . Alexander M. Anspach Jr. to Engineering Administration Manager . . . Billy C. Coleman to Health and Employee Services Manager . . . Robert M. Cohen to Program Manager . . . John L. Baird to Publications and Administrative Services Manager . . . Rae M. Rottman to Asset Management Manager.

GDSC: John J. Staud was appointed to Automated Logistics Management System (ALMS) Programs Director . . . Donald B. Pratt was promoted to Reactor Plant Services Administration Manager . . . Lewis H. Devine to Program Administration Manager . . . John E. Boyce to Egyptian Tank Plant Program Personnel Support Manager . . . Thomas C. Bennett to Egyptian Tank Plant Program Personnel Support Services Supervisor . . . Kenneth E. Acker to Reactor Plant Services Accounting Supervisor . . . Tony E. Madison to Senior Financial Specialist . . . Paul W. Fite and Jerry Turner to Senior Aircraft Specialist . . . Rosalie J. Davis to Accounting Specialist.



Inside the Complex 36B Blockhouse at Cape Canaveral (left) and Pre-Launch Activity at the Bottom of the Atlas/Centaur-66 in the Service Tower

Employees at Cape Canaveral Recall Other Atlas Successes By Julie C. Andrews

The successful launch of Atlas/Centaur-66 in December ended 1986 on a high note for the U.S. space program — especially the seasoned Space Systems team at Eastern Space and Missile Center (ESMC) at Cape Canaveral, Fla. Many of them witnessed the Challenger explosion in January 1986, and they knew the world would be watching when they launched AC-66.

Preparations for the launch began in March when the stretched Atlas G and the Centaur were delivered from San Diego, Calif., where they were manufactured, and erected one week later at ESMC's Complex 36B at Cape Canaveral.

Some of the Space Systems employees reminisced about their work at the ESMC. One of these is Jack Dean, who supervises the Launch Operations groups of technicians and mechanics working at the launch pad complex from erection to launch. He has been with General Dynamics 29 years.

He remembered the launch in December 1958 that was so secret only a few people knew what the payload was. The Atlas went into orbit and became the satellite carrying the first human voice transmitted from space, a recording of President Dwight D. Eisenhower's Christmas message to the world, Dean said.

Electrician Jim Seymour, a 30-year employee who works with the huge tower and other ground support equipment servicing the stacked launch hardware, said he remembered vividly another Atlas first: John Glenn's mission, the first manned Mercury orbital flight launched by Atlas on Feb. 20, 1962.

Group Engineer Jim Sylvester, who supervises the electrical systems group, said, "It's a thrill to think you've been part of interplanetary missions," recalling the Surveyor and Mariner missions to the Moon and Mars. Sylvester's group performed extensive tests and checkouts on AC-66's electrical system.



Mission Success. Lee Buss, Atlas/Centaur Chief Engineer; Burt Sherwood, Mission Manager; and Dennis Dunbar, Atlas/Centaur Program Director, share congratulations after the successful launch of Atlas/Centaur-66.

Group Engineer Ralph Howington, who supervises the engineers checking out the mechanical systems of the launch vehicle, said, "This is a unique business. Each time you turn loose an Atlas/Centaur, you're releasing a tre-

mendous amount of energy that must be controlled. We work very hard to make sure nothing goes unchecked."

Leon Combs, Avionics Group Engineer, supervises the work of three groups who oversee everything from the TV cameras on the pad to the integrated flight control system that performs all flight control functions on both the Atlas and the Centaur. "If they didn't pay me to work here, I'd pay to get in," said Combs.

While the hands-on work is going on at the pad, the accompanying documentation keeps pace. Launch team members say that the rocket is not ready to go until the paperwork is its equal in height, according to Engineering Drawings Checker Dan Haggard. "Quality Assurance inspectors clear paper right up to the last hour," he said.

Thoroughness is unique to the launch business, he said, and stems from the basic requirement that everything must work. "Unlike an auto, you can't drive an Atlas around the block to try it out." The cumulative documentation becomes the official record of the launch.

The ESMC team now is preparing for the launch of the last two Atlas/Centaurs for NASA in 1987. Titan/Centaur will begin launching in 1990. During the gap, according to Atlas/Centaur Program Director Dennis Dunbar, a major effort will be under way to keep the crew together and busy with the necessary get-ready work for Titan/Centaur and other potential government or commercial Atlas/Centaur missions.

"We consider this crew to be not only a company asset but also a national asset that must be preserved to keep our space program going," Dunbar said.

First Offset Vacation Travel Show Held; Additional Shows to Follow

Corporate Offset Tourism, Percival Tours, Inc. and Fort Worth's Human Resources Department recently sponsored the first General Dynamics Offset Vacation Travel Show, held at Will Rogers Auditorium in Fort Worth.

More than 1,200 employees, retirees, their family members and friends attended the show, which featured Turkish and Oriental music, films and speakers on Turkey and the Orient, refreshments and prize drawings.

After welcoming remarks by Nazli P. Weiss, Manager of Corporate Offset Tourism, Dan S. Zimmer, Fort Worth Vice President-Human Resources, explained the company's interest-free loan program for offset tours.

Other speakers included Matthew Upchurch, President of Percival Tours, Inc., who was master of ceremonies; Wynne Oz, President of World of Oz, who is an expert on tourism in Turkey, and Toby Johnson of Percival Tours, who presented the Orient portion of the program.

In her discussion of the Orient, Johnson also explained General Dynamics' Offset Vacation Winter Program, which offers one week in Hong Kong for \$799 less a \$50 discount. The price includes airfare, hotel and many extras, she said.

Charles A. Anderson, Vice President and Fort Worth General Manager, presented several door prizes. The grand prize, a trip for two to Seoul and Hong Kong, was won by Evelyn Trotter, wife of Fort Worth employee Roy L. Trotter, who is a tool engineer and has been employed at Fort Worth for 37 years.

Mrs. Trotter, who worked at Fort Worth herself about 35 years ago, plans to take her sister-in-law with her on the grand prize trip.

The grand prize was provided by Percival Tours, with Delta Air Lines providing round-trip tickets from Fort Worth to Los Angeles, to connect with Korean Air, as part of the grand prize package.

Since the Fort Worth show, a second travel show has been held for Pomona and Valley Systems employees. At that show, Alice Perry, a Flight Analysis engineer with Valley Systems, won the grand prize. Perry said she will take her trip with several friends who are planning a General Dynamics Offset Vacation to the Orient.

Additional travel shows are being planned for other

company locations and will be scheduled in the near future.

For information and brochures on all General Dynamics Offset Vacations, employees may contact their division travel offices or call Percival Tours, Inc., via toll free numbers: 1-800-527-8448 (U.S.) and 1-800-482-8282 (Texas only).



Offset Vacation Travel Show. At the first General Dynamics Offset Vacation Travel Show are (left to right) Matthew Upchurch, President of Percival Tours; Nazli P. Weiss, Manager of Corporate Offset Tourism; Evelyn Trotter, grand prize winner; Charles A. Anderson, Vice President and Fort Worth General Manager; and Marsha Crear, Delta Airlines representative.

San Diego Ethics Directors Respond to Variety of Questions By George Salamon

Two callers on the hotline had voiced their concerns to an Ethics Program Director in San Diego about the new wording of the supervisor's certification on the company's time cards.

Time card reporting is a highly important area to the government and its contractors, and General Dynamics has embarked on a comprehensive program to strengthen its policies and procedures of labor charging and to train its employees in the mechanics of labor reporting.

The director was therefore astonished to hear one caller say: "I've got people working for me in different plants, so how can I sign my part of the time card?"

What the supervisor had trouble signing was his certification statement, which read: "Supervisor signs to certify the accuracy of the accounts charged, and that the hours reported were spent performing prescribed tasks."

"There were concerns expressed over the supervisor's certification at other divisions, too," said the Ethics Director. "These concerns were all over a corporate policy. The corporation was responsive. The wording is being changed."

The revised wording, now under consideration, reads: "Supervisor signs to certify that the accounts charged are accurate and, to the best of his/her knowledge and belief, the hours reported were spent performing prescribed tasks."

The Ethics Program Directors of the company's four San Diego divisions agree that the nature and resolution of the time card certification calls were unusual. Eighty percent of all calls are requests for information or advice, according to the experiences of Richard L. Neal, Space Systems; John C. Barrons, Convair; M. Ray Reynante, Electronics and Ed Campbell, DatagraphiX. About 15 percent to 18 percent voice concerns, and approximately 2 percent to 5 percent make allegations.

Most calls deal with procedural questions, many having to do with the details of time charging or the nuances of gifts and gratuities, they said. The rest have to do with fairness, with how employees perceive they are being treated. Often there are no ethical dilemmas in the situations the calls raise, but they touch on the company's commitment, as expressed in the Standards, to treat all employees fairly and with dignity and respect.

How are most "problems" or "perceptions" aired through these calls — or through personal visits and letters — resolved or changed? What actually happens in most cases? And what happens in the cases that prove to contain an ethical dilemma or a justifiable allegation?

"Almost all cases dealing with treatment of employees are solved through some common sense advice and knowledge of company policies," said one of the directors. Other calls require more information and judgment.

One of the directors recalled that "a secretary from a commercial operation called me on the hotline. She said her boss asked her to type a newsletter for his community work on the company typewriter, on company paper and during working hours." She wanted the Ethics Director's opinion if performance of such work was ethical or violated company policy. She preferred to remain anonymous and would not divulge the identity of her boss.

"I tried to find out more about our policy on community work and questioned her about her boss' role in his activity," the director said. "He turned out to be a voluntary official, who occasionally asked her to type a newsletter or financial statements. Our division encourages employees to participate in community activities. In this case, in my view, his work entailed administrative and management experience, and it added value for his own career development at General Dynamics while helping out the community."

"I told her," the director added, "that unless his volunteer work interfered with his or her job, it seemed permissible. It seemed to fit positively into all the criteria: Is it good for the community? Does it aid the person's growth? Is only a reasonable amount of time involved and almost no company resources? She seemed reassured by my answer. But I also told her that if she had any bias against this kind of activity, someone else should be found to do the work. Because both principals in this case remained anonymous, I couldn't do anything else to follow up. I give my view based on the facts available to me. But I did urge her to sit down with her boss and discuss the whole matter."

In another call, the General Dynamics employee reported that "my neighborhood is giving a farewell party for an admiral who is being transferred. His new position would be that of commander of a unit buying one of our products. My house has been suggested as the site for the party. Can I do it?"

The idea for the party came from others — neighbors, some civilians and others in the military. These neighbors would contribute refreshments and decorations. "I told him that any contribution he made for the party would have to come out of his own pocket," the director said. "But what's relevant here isn't whether the admiral had or hadn't done business with the company. It's that this was

strictly a neighborhood affair. Company policy does not prohibit the exchange of social favors on a personal basis like that."

Refreshments provided to General Dynamics employees at another event resulted in quite different consequences. Approximately 30 members from several departments attended an all-day meeting organized by a company supplier. The purpose of the meeting was to review a proposal for the products and services the supplier wanted to sell to General Dynamics.

In a letter to one of the Ethics Directors, one of the attendees described what took place during the meeting: "First thing in the morning, coffee and donuts were provided by (the supplier). There were no opportunities for payment for the refreshments. Lunch also was provided, but no provisions were made for General Dynamics employees to follow the ethics standards and pay for their lunch."

"About 22 of our people accepted the donuts and lunch," said the Ethics Director. "Some, like the writer of the letter, turned them down. Even though they were all trapped in this situation, it was a clear violation of CPP 23-107 on 'Conflicts of Interests - Meals, Refreshments, Gifts and Other Items of Value from Suppliers and Subcontractors.'"



Ethical Discussion. Comparing their answers to questions and approaches to the resolutions of situations brought before them are (from left to right) four San Diego-based Ethics Program Directors: Ray Reynante, Electronics; Ed Campbell, DatagraphiX; Dick Neal, Space Systems; and John Barrons, Convair.

"Each attendee was asked to respond to a form letter, indicating whether or not he or she had accepted the provided refreshments," the director said. "We then reimbursed the supplier for the amount covering all of our people who had accepted and sent them a copy of the Standards to explain our position."

All supervisors in the division received a letter from the General Manager. The letter requested supervisors to communicate to employees what actions they must take in such circumstances, namely to make arrangements to pay for their own refreshments and meals before the event.

"This case represents a typical situation," said the Ethics Director. "There was never any premeditation to get free food. It just happened because there seemed to be no way out of it. The letter to each of the supervisors gave everybody notice that it's up to them to find that way." It suggested that if there seems no way to pay in advance, employees can attempt to pay upon receipt of food or refreshments or make reimbursement as soon thereafter as possible.

Several of the cases discussed might have been resolved in a similar fashion at other or all company locations. Or, they could have been settled in other ways, depending on the unique circumstances involved. There rarely are textbook answers in most real cases. While the situations discussed thus far represent the vast majority of those that arise during the company's daily business activities, occasionally serious allegations of violations of the Standards are brought to the attention of supervisors and Ethics Directors.

The first step upon hearing of alleged violations of the Standards is a prompt investigation of the facts. When an employee told the supervisor on July 2, 1986, "I think something is not right in the way we're processing check requisitions," the supervisor and a representative from Industrial Security examined the check requisitions made out for payments to suppliers in the employee's department.

What they found during their screening of records on July 3rd and 4th prompted a call to the division's Ethics Program Director on July 5th: "You need to come over right away." The two-day examination had revealed payments made to private residences or to addresses that did not exist.

On the 5th, the supervisor, the Director of Security, the

Ethics Program Director, the Vice President-Human Resources and the Legal Counsel reviewed the documentation and found it "very damning." The group then consulted CPP 23-103, "Investigations and Sanctions-Business Ethics and Conduct," and requested a meeting with the division's General Manager.

At that meeting, held on July 7th, the group proposed a formal investigation of the allegation and asked for the appointment of a cognizant manager to head the investigation. "It's very important that such a person, in our case, a senior member of the General Manager's staff, is in charge. He receives and acts on the advice of counsel on behalf of the corporation and protects both the corporation and the individual under investigation," said the Ethics Program Director.

After the cognizant manager had been selected, the investigation moved swiftly. On July 8th, the alleged violator was summoned and interviewed by the Chief of Industrial Security, the Chief of Internal Audit and the Ethics Program Director. Simultaneously, the employee of another division, who allegedly had been part of the check requisitions scheme, was interviewed by the Legal Counsel and Chief of Industrial Security of that division. Both employees signed limited or partial confessions, admitting to "some wrongdoing." Both were suspended from work,

pending further investigation.

On the following day, the formal investigative team was appointed. The six-person team met and set its agenda. It decided whom to interview, which years to audit, what kinds and how many records to examine. The investigative format was thus set. Two days later, on July 11th, an audit center had been set up and the requisitioned records had arrived. The interview schedule was determined. The team had also notified the Federal Bureau of Investigation (FBI), the Defense Investigative Service (DIS) and the local representative of the Defense Contract Audit Agency.

"We also set up an escrow fund of \$50,000 to reimburse the U.S. Government for any possible damages," said the Ethics Program Director. "Our preliminary investigation had indicated that amount to be the maximum possible loss to the government."

Both employees were also terminated on the basis of their partial confessions. Three days later, the investigative team began its two-week long probe. The results of 2,000 hours of interviewing and examining of documents were presented to the General Manager on July 29th, with the recommendation that the case be handed over to local authorities for civil prosecution. The next day, these findings were presented to the offices of the U.S. Attorney, the District Attorney, the FBI and the DIS.

On Oct. 23rd, both employees pleaded guilty to charges of grand theft and conspiracy to defraud and were sentenced in Municipal Court. About \$12,000 of questionable overhead costs, or the maximum amount in question, were reimbursed to the government. The judge called the actions of the two employees "the classic violation of trust."

"What is significant is that each case showed that it's all right to raise concerns, that confidentiality is being maintained, and that the company finds ways to be responsive," said Kent Druyvesteyn, Corporate Ethics Program Director. "From thoughtful advice to painstaking investigation, the mechanisms are there to respond."

One of the Ethics Directors in San Diego sums up his perception of employee willingness to call in questions or concerns: "It's not like calling home yet," he said, "but even if they get what seems like a negative response, they're happy to be heard, happy that their concerns are being considered."

Valley Systems Contest Boosts Time Card Accuracy Awareness by Jim Gilkerson

An innovative method was developed recently at Valley Systems to reinforce the time card and labor recording training that employees have received as part of the company's initiative to achieve excellence in administration.

"We wanted to find a way to capitalize on the positive approach the company has been following toward labor charging," said Steve Eggen, Director of Accounting. "Employee awareness was there; we simply needed to maintain the momentum."

The solution was what Valley Systems called "The Great Time Card Contest," Eggen said. Displays were set up showing an error-ridden time card, and employees were challenged by a "Tommy Timecard" caricature to find the errors and enter the contest.

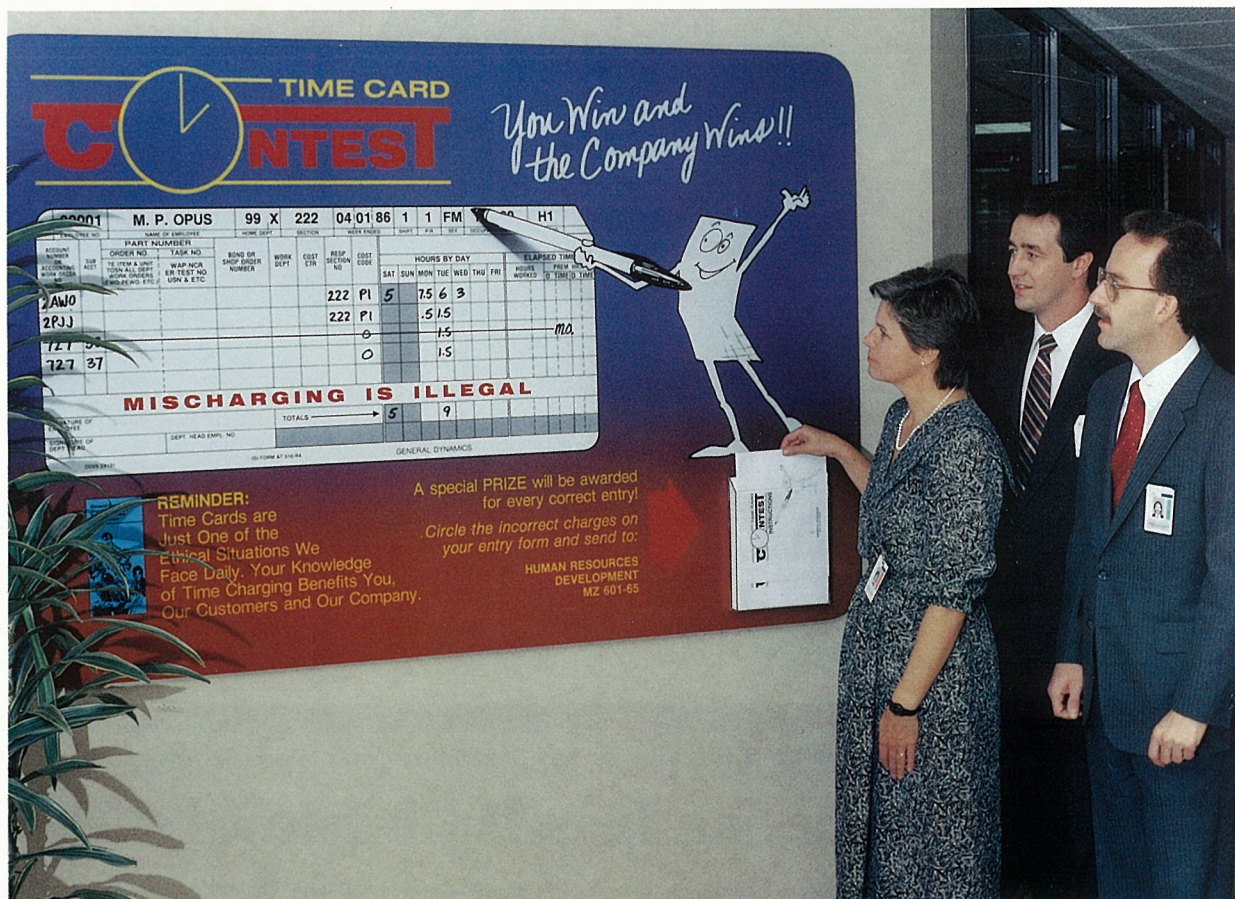
All employees who submitted contest entry forms correctly identifying the errors won coffee mugs which also display "Tommy Timecard." Employees whose entries were incorrect were urged to re-enter until their entries were winners.

"The errors we selected to display were those most commonly committed at Valley Systems. Because of the contest, we hope there will be an incentive to learn to correct them," said Eggen.

"From a training perspective, the contest reinforced the training we have already received," said Dr. Sid Ward, Manager of Human Resource Development. "More importantly, it highlighted the key learning points in a positive way."

The decorated coffee mugs were selected as prizes because they are useful, visible and relate closely to the topic, said Ward. "We tried to create a positive reminder of the need to be diligent about labor charging."

Approximately 80 percent of Valley Systems employees submitted contest entries, according to Ward.



Accurate Record. Rae Rottman, Manager of Asset Management, Jon Gunderson, Manager of Cost Control, and Bryan Koetting, Chief, Labor Accounting, (left to right) make a last-minute check of one of Valley Systems' Time Card Contest displays.

Fort Worth Hosts Environmental Resources Management Symposium

Fort Worth recently hosted an Environmental Resources Management (ERM) Symposium that was attended by approximately 40 representatives of various aerospace manufacturing firms, other General Dynamics divisions, Corporate Headquarters and the U.S. Air Force.

The three-day session, titled ERM Symposium I, was intended to heighten awareness of ERM issues and be a forum for information interchange within the aerospace industry, said Bill Rosenthal, Fort Worth's Program Manager for ERM.

Lockheed, Boeing, McDonnell Douglas, Hughes, Rockwell, Northrop, LTV and Bell Helicopter were among companies represented at the symposium. Charles N. White, Fort Worth Vice President-Production, in the keynote address, stressed that a commitment from top management throughout industry will be required to make ERM goals attainable. A number of symposium participants from the various companies made presentations on specific issues and technologies in symposium meetings.

Frank J. Basile Jr., General Dynamics' Corporate ERM Director, also addressed the group.

Incineration technology, aircraft surface coating processes, new regulations and painting equipment improvements were among topics discussed in meetings at the

ERM symposium, said Earl Turns of Fort Worth's Research & Engineering Department. Turns, project engineer for the division's ERM program, leads an Engineering ERM team which explores new technologies which could reduce hazardous wastes.

The ERM symposium participants and attendees made many positive comments about the value and effectiveness of the meetings, said Rosenthal. "The success of this symposium resulted from the hard work of Fort Worth's Engineering ERM team in doing the bulk of the preparation, and from the truly professional presentations made by all the participants. We hope that the exchange of information will continue in additional ERM symposiums in the future," he said.

General Dynamics has established a corporate initiative to reduce or eliminate the use of hazardous materials and the generation, discharge and disposal of hazardous waste, Rosenthal said. The ultimate goal of this policy is to achieve "zero discharge" of substances that are considered hazardous.

President Oliver C. Boileau has stated that the General Dynamics approach to ERM "involves more than compliance" with existing laws and standards governing environmental matters.

Fort Worth is considering a conceptual plan to eventually reduce its emissions of hazardous wastes — or materials that must be disposed of offsite — by 90 percent, said Rosenthal. "Refinement of the existing concepts and finding solutions for the remaining 10 percent are our continuing challenge," he said.

Other company divisions are developing similar plans.

Turns said Fort Worth's program is a cooperative effort of many division departments, functional groups and individuals. For instance, the Materials and Process Control Department, which has operational responsibility for ERM, is also involved in technology development projects, he said.

Several of the projects are already being implemented into production, said Bill Kaarlela, Manager of Materials and Process Control. "All of the division's combined technical innovations will ultimately be utilized in production to eliminate hazardous wastes. Materials and Process Control will have the operational and final disposition responsibilities," he said.

Other important roles are being performed by designers, materials and process engineers, facility engineers, purchasing agents, manufacturing engineers and others, Kaarlela said.

Astronaut Chats With Students Nationwide Via Company Assistance

A grant from Space Systems and production assistance from Convair's Motion Pictures and Television Department made it possible for Apollo astronaut Russell L. "Rusty" Schweickart to spend an hour talking with students from all over the United States in November.

Schweickart was the star of a live, interactive video teleconference originating from the studios of KPBS on the San Diego State University campus and linked to classrooms nationwide via satellite.

Students phoned in questions for Schweickart, and an in-studio group added its queries on space topics — covering everything from Schweickart's personal experiences as the lunar module pilot on Apollo 9, to the future colonization of planets.

Bill Stevens and John Gray III of Convair served as director and producer of the teleconference, with technical assistance from T. W. Landis and Todd Finnigan. Space Systems' support was provided in response to a request from the Teacher in Space Foundation.

Schweickart joined NASA in October 1963. In addition to participating in Apollo 9, the third manned flight of the Apollo series, he served as a backup commander for the first Skylab mission in 1973.

Schweickart recently returned from Budapest, Hungary, where American astronauts and Soviet cosmonauts met to form the Association of Space Explorers, which promotes international cooperation in space.



Rusty Schweickart Show. Astronaut Rusty Schweickart, wearing coat and tie, speaks to students in studio and in satellite-linked classrooms nationwide. Teleconference moderator is at Schweickart's left on platform.



Attack Submarine *San Juan* Is Launched into the Thames River and Mrs. Sherrill Hernandez Christens the Ship with the Traditional Bottle of Champagne

Attack Submarine San Juan Is Christened at Electric Boat's Shipyard

It was a traditional Yankee sendoff with a Caribbean flavor as the attack submarine *San Juan* (SSN 751) slid into the Thames River at Electric Boat on Dec. 6th, generating a special pride for New Englanders and Puerto Ricans alike.

Moments earlier, Mrs. Sherrill Hernandez, wife of Vice Adm. Diego E. Hernandez, Commander of the U.S. Navy's Third Fleet, had smashed a bottle of champagne against a striking bar on the bow of the *San Juan*.



Admiral Hernandez the 23rd SSN 688-class submarine the shipyard has launched.

At the same instant, Norman McIntyre Jr., retired North Yard Ways Manager, received the command to launch at his station next to the building ways halfway down the port side of the ship. McIntyre shoved a six-foot trigger forward, releasing *San Juan* for her slide.

Strains of the U.S. Coast Guard Band's "Anchors Aweigh" rang out over the applause and cheers of 3,000 spectators and guests as the *San Juan* gathered speed and plunged backward into the river.

Earlier in the launching ceremony, the crowd heard Admiral Hernandez, the principal speaker and a native of San Juan, call the 360-foot vessel "tangible evidence of the Navy's reconstruction program. When commissioned, she will be the most capable submarine in the world."

The admiral said that launching a ship on the eve of the anniversary of the bombing of Pearl Harbor was a fitting reminder of the "consequences of being ill-prepared for war in a time of peace."

"So long as we in this country continue to understand that we will not be challenged militarily by nations which perceive us to be strong, and so long as our Congress reflects that understanding in its actions, this *San Juan* will not have to be called into battle like her namesake of the 1940s," Hernandez said, referring to the light cruiser that earned 13 battle stars for World War II service.

The admiral warned of a growing undersea threat from the Soviet Union, but said U.S. submarines are technically

superior to their Soviet counterparts.

San Juan Mayor Baltasar Corrada said that naming a submarine after the capital of Puerto Rico is a "well deserved recognition of worthy United States citizens, as all Puerto Ricans are."

Corrada added that he hoped the ship's hull number, SSN 751, was a prophesy of things to come. "I hope soon San Juan will be the capital city of the 51st state of the union," he said. "That is my goal and the goal of many other Puerto Ricans I represent today."

Chairman and Chief Executive Officer Stanley C. Pace spoke of the "outstanding men and women at Electric Boat who worked so hard to build this magnificent ship" and said that the *San Juan* "represents the very best of today's technology. . ."

Electric Boat Vice President-General Manager Fritz Tovar, in welcoming spectators and guests, also praised the shipyard workforce. Tovar said a launching is always an exciting event because "it demonstrates that the men and women of this shipyard have once again proven their skills and ability."

Convair Will Build Fuselages for the New MD-11 Widebody Jetliner

Convair will build the fuselages for the new McDonnell Douglas widebody jetliner, the MD-11. The go-ahead on the program was announced by McDonnell Douglas on Dec. 30th.

Roy Gilmour, Program Director-Aircraft Programs, said Convair has submitted a proposal and is negotiating the pricing and terms for 200 shipsets. Delivery of the first fuselage is projected for the summer of 1988.

The MD-11 fuselage production program has a potential worth of \$2.5 billion, Gilmour said. "Production of the MD-11 fuselage is an extension of the DC-10/KC-10 fuselage production program," he said. That program began in 1968 and has produced \$1.5 billion in sales.

Since 1970, Convair has delivered 378 DC-10 and 57 KC-10 fuselages to McDonnell Douglas for final assembly at its Long Beach, Calif. plant. Convair is completing the remaining three KC-10 fuselages and will fabricate 10 more DC-10 fuselages before turning to production of the MD-11 fuselage.

MD-11 production planning and tooling will begin immediately, leading to the start of the first fuselage assembly at the end of the year.

Employment is expected to rise gradually until production peaks sometime in 1991, Gilmour said. At that time, fuselage production is expected to reach a rate of three or four per month and total employment on the program will be 2,000 people.

"The DC-10 program was nearing its end," said Gilmour, "but this significant new business will keep us in aircraft production through the 1990s."

The MD-11 is a stretched and improved version of the DC-10. The longer fuselage of the MD-11 will be produced by adding two short fuselage sections in addition to the three major sections now delivered for the DC-10.

The MD-11 will have 25 percent greater range than a DC-10 and is expected to satisfy the market for an airliner between the Boeing 747 and large twin-engine aircraft such as the Boeing 767 and Airbus A300.



New Jetliner. Convair will build the fuselages for the new McDonnell Douglas MD-11 widebody jetliner, shown above in an artist's concept. Delivery of the first fuselage is projected for 1988.

Facility at Charleston To Reopen to Support Submarine Programs

The company announced on Jan. 22nd that it will reopen the Charleston, S.C., facility as a structural steel fabrication center to support submarine construction programs of Electric Boat. The facility has been closed since January 1982.

The work will involve the manufacture of structural steel components and sub-assemblies for Trident and SSN 688-class attack submarines being built by Electric Boat for the U.S. Navy, and later for the new SSN



Hatzis

21 class of attack submarines for which the company will compete.

Constantin Hatzis, Division Vice President-Operations at Quincy Shipbuilding since 1981, has been named Vice President and General Manager of the facility.

The company estimates that it will employ 250 to 300 people at Charleston by the end of 1987, and employment

(Continued on Page 2)

First Fort Worth-Built F-16C for Israelis Delivered This Month

The Israeli Air Force received its first Fort Worth-built F-16C in ceremonies on Feb. 9th at an IAF base in Israel. The aircraft is a modified version of the standard F-16C/D, incorporating IAF-tailored and Israeli-produced equipment.

It is the first of 51 F-16Cs and 24 F-16Ds to be delivered to Israel through November 1988, under an agreement signed in late 1983.

Deliveries under Israel's initial order of 75 F-16A/B aircraft were completed in 1981. Israel joins the U.S. Air Force, Egyptian Air Force and Republic of Korea Air Force in having F-16C/Ds in its inventory.

The IAF's F-16C/Ds are powered by the General Electric F110 engine. Israel is the first nation to join the U.S. Air Force in flying F110-powered Fighting Falcons.

Company Announces Loss for 4th Quarter And for Full Year

On Feb. 2nd, General Dynamics announced a net loss of \$326.1 million, or \$7.64 per share, for the fourth quarter of 1986 and \$52.5 million, or \$1.23 per share, for the full year. The loss is attributable to the charge to earnings, announced on Jan. 8th, of \$420.2 million, or \$9.84 per share, of the purchase price of Cessna Aircraft. The results also include the effect of discontinued operations at Quincy Shipbuilding and Datagraphix.

The company's loss from continuing operations for the quarter and year was \$334.6 million, or \$7.83 per share, and \$62.6 million, or \$1.46 per share, respectively. Comparable 1985 earnings from continuing operations were \$82.2 million, or \$1.94 per share, and \$361.1 million, or \$8.53 per share.

Excluding the effect of the company's charge to earnings for Cessna, earnings from continuing operations were \$85.6 million, or \$2.01 per share, for the fourth quarter of 1986 and \$357.6 million, or \$8.38 per share, for the year.

(Continued on Page 2)

Employee Survey Feedback Is Well Underway

Survey feedback is well underway throughout the company, according to Sue Shike, Survey Project Director.

Following the Dec. 19th publication of the corporate-wide survey results, Special Editions of General Dynamics World were prepared so that employees at each major division, subsidiary and location could receive their location's results.

"Most feedback sessions will be completed by the end of February," Shike said. "Action planning to address concerns identified in the feedback sessions will be accomplished in separate follow-on meetings."

"Task teams are being formed to deal with some specific issues," Shike said. "During March, the reports of these action-plan sessions will begin to roll up through succeeding levels of the organization."

"Three types of action-plan reports are expected to emerge," Shike said.

"The first is a list of actions that can be taken in the work group which need no additional approvals or resources," she said. "Management is encouraged to implement those changes that are within its authority and resources without waiting to report them formally."

Shike said the second suggested type of plan needs additional approvals or resources within the division.

"The third type is those suggested plans that need approval or resources at the corporate level," she said.

These action plans will all be summarized and reported by the General Managers to the executive group in a meeting later this spring, Shike said.

The outcome of that meeting will then be published in a Special Edition of General Dynamics World.

In addition, the division and work group action plans

Company Newspaper Receives Good Rating In Employee Survey

Based on results in the recent corporatewide survey of employees, General Dynamics World was rated "very good" by 60 percent of the employees responding. Only nine percent rated the company's official newspaper in the "poor" or "very poor" categories. According to Sirota and Alper, Inc., the survey consultants, this 60 percent favorable rating is considerably higher than most company newspapers received at other firms they have surveyed.

Volume 1 - No. 1 of General Dynamics World was published on June 9, 1971, shortly after the company moved its corporate headquarters from New York City to St. Louis. The World's ancestry includes General Dynamics News, its immediate predecessor, as well as The Speaker, The Scope, The Consolidator and other earlier company publications.

General Dynamics World is also being used as a vehicle to publish the employee survey results, including Special Editions for the Corporate Office and each major company location.

will be communicated internally, through regular or special means, Shike said.



Upgraded Aircraft. U.S. Air Force F-111F assigned at RAF Lakenheath, England, maneuvers during a training mission. F-111Fs are among the aircraft models that will be upgraded with the F-111 digital flight control system being developed at Fort Worth.

Fort Worth Wins Important USAF Contract For Advanced F-111 Digital Flight Controls

The U.S. Air Force has awarded a \$33.2 million contract to Fort Worth for the full-scale development of an advanced digital flight control system that will eventually be used to upgrade the service's entire F-111 fleet.

The program could total approximately \$93 million, pending a decision on the production of digital flight control modification kits in about two years.

The current contract covers flight control system mechanization and design, hardware procurement, installation design, digital flight control computer software development, system integration and installation and flight testing of the new system in an FB-111A and EF-111A at Edwards AFB, Calif., according to Robert F. Reams, Fort Worth's Program Manager for F-111 Digital Flight Controls.

The new system will provide improved safety, reliability and maintainability benefits over the F-111 fleet's present analog flight controls, Reams said. The cost savings will result from a reduction in aircraft maintenance requirements, a reduction in off-aircraft maintenance of system components at the shop and depot levels, reduced spares requirements and fewer aborted missions, he said.

Most of the components in the present flight control system were designed and manufactured in the 1960s. "The new system will be many times more reliable than the older system. It will retain all of the modes and functions of the analog system, as well as maintain the current aircraft flight handling characteristics. However, some of

the modes will be enhanced and new capabilities will be added through the application of digital technology," he explained.

A major aspect of the program is that six electronic units will be replaced by one digital computer. The system will also incorporate increased fault isolation and self-testing features.

System software development, using the F-111 Flight Simulator Facility at Fort Worth, will be a key element of the program. The F-111 simulator will be used to establish aircraft handling qualities, verify the mechanization and develop and test the software. The simulator will also be used to evaluate how the new system affects pilot performance.

The present contract is administered by the USAF's Aeronautical Systems Division at Wright-Patterson AFB, Ohio. Sacramento Air Logistics Center, McClellan AFB, Calif., is expected to manage the production phase.

The production contract would be for \$57.7 million, with maintenance trainer options totaling an additional \$2 million, Reams said.

The digital flight control computer will be developed and supplied by Lear Siegler, which is currently producing a similar computer for the F-15.

Fort Worth won the F-111 Digital Flight Control System contract in a competition with Grumman Aerospace.

Tomahawk Launches Provide Good Start For the 1987 Program

Three Convair-built Tomahawk cruise missiles were launched on two consecutive days from two different shipboard platforms off the Gulf Coast of Florida. The successful launch and flight of three missiles within a 24-hour period is a Tomahawk first and is a positive beginning for the aggressive flight test program scheduled for 1987.

Rear Adm. L. E. Blose, Director of the Cruise Missile Project, said, "The successful completion of three Tomahawk land-attack missions from two firing units in 24 hours demonstrated the maturity of the entire Tomahawk weapon system and its readiness to support the national goals of the United States."

The first two tests conducted on Jan. 19th were launched from a surface ship and a submerged submarine. The third missile was launched from the same submerged submarine on the following day. In each test, the missiles made the transition to cruise flight seconds after launch and flew fully guided test flights over portions of Florida and Alabama before terminating at the Eglin AFB Test Range, approximately 700 miles from the launch point.

The Tomahawks were guided to the gulf coastline by onboard inertial navigation sets. Once over land, the missiles' inertial navigation sets were periodically updated by the Terrain Contour Matching system, which successfully guided the missiles to a recovery area at the Eglin range.

Designed for both land attack and ship attack missions, the U.S. Navy Tomahawk missiles are capable of being deployed on attack submarines and various surface ships.

"These three missions will support Tomahawk fleet introduction and increased availability of Tomahawk cruise missiles for deploying units," Admiral Blose said.

Facility at Charleston To Support Submarine Construction Programs

(Continued from Page 1)

will increase to a total of 500 when full production is reached in mid-1988.

Company officials emphasized that the reopening will have no effect on employment levels at either Groton, Conn., where Electric Boat employs about 19,000 people, or Quonset Point, R.I., which has a workforce of about 6,000.

The renovation of the Charleston facility will take about two months and will be followed immediately by the start-up of production.

General Dynamics purchased the 80-acre facility from Pittsburgh-Des Moines Steel Company in 1975.

Hatzis joined General Dynamics as Operations Manager at Charleston in 1975 and was named General Manager there two years later. While at Charleston, he directed the start-up of production of large aluminum spheres to contain liquefied natural gas on tankers then being built by General Dynamics at its Quincy shipyard.

Prior to joining General Dynamics, Hatzis held positions of increasing responsibility with Davie Shipbuilding, Ltd. in Quebec, Canada, from 1968 to 1975.

A native of Greece, Hatzis holds a Master of Mechanical Engineering degree from the Technical University of Aachen, West Germany. He is a member of the National Society of Professional Engineers, the American Society for Metals and Order of Engineers of Quebec, Canada.

Cebulski Is Honored By Air National Guard

Edward Cebulski, a Land Systems logistics engineer, recently was honored by the enlisted men of the 127th Tactical Fighter Wing, an Air National Guard unit based at Selfridge ANG Base, Mich.

Cebulski, a colonel, received one plaque depicting the Air Force Crest and a second known as the Forgotten Mechanic Plaque, given in recognition of the dedicated ground maintenance personnel who keep the aircraft flying.

He was cited for his contributions to consistently excellent and outstanding performance scorings by his maintenance squadrons and for his compassion and concern for the personnel in his command.



Award Presented. J. Edward Ward (center), General Dynamics' representative on the Board of Directors of the U.S.-Korea Society, has been honored for his contribution to the society and its programs. General Dynamics Chairman Stanley C. Pace (right) recently presented a Certificate of Appreciation to Ward on behalf of the society while James R. Mellor, Executive Vice President-Marine, Land Systems and International, looked on. Ward is Corporate Manager, International Business Development-Far East. Among his contributions to the society were his successful efforts to get the State of Missouri to apply for membership in the organization.

Reed Elected Head of Cooperative R&D Board

Danny L. Reed, Director of Manufacturing Development at Fort Worth, was recently elected Chairman of the Board of Directors of Computer-Aided Manufacturing-International, Inc. (CAM-I), a cooperative research and development organization which focuses on advanced manufacturing applications.



Reed

Fort Worth, which is a leader in advanced manufacturing technologies, has been a supporter of CAM-I since its beginning in 1972.

CAM-I holds periodic meetings on topics related to computer-integrated manufacturing. The organization has applied to the American National Standards Institute for accreditation as a standards-making organization, Reed said.

"CAM-I encourages companies from all over the world to come together to share experiences and pool resources for the advancement of manufacturing technology," said Reed. "When technology evolves independently in different business sectors without communication, inefficiencies can occur and implementation can be slowed. CAM-I allows companies to combine their resources and expertise to avoid duplication of development. This concept promotes much more efficient exploration, understanding, development and implementation of new technologies."

CAM-I's members include representatives of approximately 50 U.S. firms, more than 30 European firms, 15 Japanese firms and the Government of Australia. The organization also includes representatives of more than 40 educational institutions in various countries.

Reed has been employed at Fort Worth since 1967 and has served as a manufacturing technology supervisor, chief and manager. In his current position, he is responsible for directing the Advanced Manufacturing Technology, Manufacturing Systems and Technology Modernization groups. He holds a bachelor's degree in civil engineering and master's and doctorate degrees in engineering science from the University of Tennessee.

Company Reports Loss for 4th Quarter, Year

(Continued from Page 1)

That compares to \$82.2 million, or \$1.94 per share, and \$361.1 million, or \$8.53 per share, for the respective periods in 1985.

Sales increased in 1986 to \$8.9 billion, up 12 percent from the \$8.0 billion reported for 1985. For the quarter, sales were \$2.4 billion in 1986 compared to \$2.2 billion in 1985. Funded backlog at the end of 1986 was \$16.8 billion, and total backlog (funded and unfunded) reached \$22.5 billion.

"Operating earnings at Cessna were above breakeven during the fourth quarter, and significantly better than in each of the three previous quarters of 1986," said Stanley C. Pace, Chairman and Chief Executive Officer. "While the seasonality of the industry contributed to this improvement, we also believe that the actions taken during the quarter in response to the depressed conditions of this market will contribute favorably to 1987 results."

"Our major defense business segments reflect a steady performance and our programs remain at the heart of U.S. strategic and tactical military planning into the next century," Pace said. "Changes in defense acquisition policies are beginning to alter traditional competitive and contractual practices, with contractors expected to bear greater financial risks and costs in an environment of

intensified competition.

"General Dynamics continues to enhance its competitive edge. The sound financial condition of the company enables us to continue investments in research and development and capital expenditures to maintain our leadership position."

Two decisions by the government in the fourth quarter reinforce General Dynamics' role as a leading supplier of high-quality, cost-effective systems:

- The U.S. Air Force selected a missionized version of the F-16A as its new Air Defense Fighter. The cost of modifying these 270 F-16s will be approximately one sixth of the \$4 billion required to procure an equal number of the competing aircraft for this role. All 270 interceptor aircraft are expected to be in service with the Air National Guard by 1991.

- General Dynamics is teamed with Lockheed and Boeing in a continuing competition to develop the Air Force's Advanced Tactical Fighter (ATF), a highly sophisticated air superiority fighter that will begin replacing the F-15 in the late 1990s. Two industry teams are working under parallel contracts for the design and assembly of ATF prototypes, with flight testing scheduled to begin in 1989.

Max E. Bleck Named Cessna's President, Chief Operating Officer

Max E. Bleck has been named President and Chief Operating Officer of Cessna Aircraft Company.

Bleck returns to Cessna where he held key engineering and manufacturing positions from 1962 to 1975. His last position at Cessna was Group Vice President, with responsibility for all aircraft manufacturing operations.

A graduate of Rensselaer Polytechnic Institute, Bleck joined Cessna as Chief Engineer of the Military and Commercial Aircraft Division. He was promoted to



Bleck division in 1966 and to Vice President in 1968. His appointment as Group Vice President was made in 1973.

Bleck was President of Piper Aircraft Corp. from 1978 to 1984, after serving three years as Executive Vice President. He most recently was Vice President and Manager of Engineering at Beech Aircraft Corp.

In announcing Bleck's appointment, Cessna Chairman and Chief Executive Officer Russ Meyer said Bleck has a broad and very comprehensive background in the design and production of a wide range of aircraft. And he noted that Bleck played a major role in developing Cessna's first version of the highly successful Citation business jet aircraft.

Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	Dec. 1984	Dec. 1985	Dec. 1986
Salaried			
Government Bonds	10.1%	15.3%	10.4%
Diversified Portfolio	3.4%	35.6%	22.5%
Fixed Income	12.5%	12.3%	12.0%
Hourly			
Government Bonds	10.1%	15.4%	10.0%
Diversified Portfolio	2.8%	35.4%	23.1%
Fixed Income*	N/A	12.3%	12.1%
GD Stock Closing Price	\$69.50	\$68.75	\$67.75

* Fixed Income effective 6/30/85

Electric Boat Sponsors Welding Fellowship

Electric Boat has teamed with the Welding Research Council (WRC) to sponsor a graduate fellowship at the Massachusetts Institute of Technology.

The division and the WRC, based in New York, are sharing the \$10,000 cost of the fellowship, which funds a graduate student's research into welding electrode coating binders — the material that binds the electrode coating together and is the major ingredient in the control of electrode moisture.

The recipient of the fellowship, Jon Kryscnski, who graduated last June from Rensselaer Polytechnic Institute with a bachelor's degree in materials engineering, was a member of Electric Boat's Welding Engineering Department last summer. Kryscnski's work on the project will include coordinating a production trial for a welding flux binder invented by MIT.

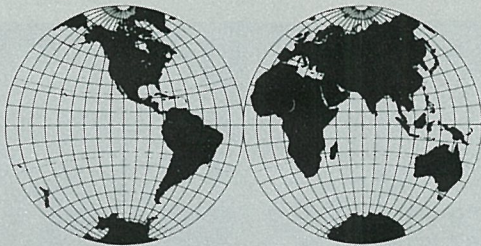
"This fellowship shows the company's concern for education and technical progress in the field of welding engineering," said James Cameron, Electric Boat's Senior Staff Engineer in Welding Engineering.

GENERAL DYNAMICS World

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Manager of Internal Communication: Edward D. Williams

Contributors: Julie Andrews, John Doty,
Jim Gilkerson, Dean Humphrey, Jack Isabel,
Jerry Littman, Karl Oskoian, Jack Price, Jim
Reyburn, Tom Rule, Joe Stout, Z. Joe Thornton



Around the World

CHQ: Peter K. Connolly was appointed to Corporate Director-Public Affairs . . . Michael C. Lucero to Corporate Director-Personnel Planning & Placement . . . Randy M. Ritter joined as Internal Audit Chief . . . Robyn K. Ryan transferred from Pomona and was promoted to Senior Auditor . . . Robert Gallo transferred from Fort Worth and was promoted to Corporate Director-Facilities . . . James C. Rochfort was promoted to Corporate Manager-Office Systems Development . . . Paul W. Maul to Corporate Manager-Administration and Planning/Government Relations.

Fort Worth: Robert T. Elrod was appointed to F-16 Deputy Program Director-Plans, Controls and Contracts . . . Steven J. Andrew to Estimating and Cost Analysis Director . . . Jan Blok to Manufacturing Director-Fabrication & Subassembly . . . Raymond E. Emerson to F-16 Programs Director-F-16 International Office/Israel . . . Ernest G. Aiken was promoted to Technical Publications Illustrator . . . John L. Applegate, Kathy M. Cramer, Billy C. Davis and George W. Mars to Inspection Supervisor . . . Thomas D. Arber and Marshall P. Griffin to Procurement Manager . . . Anne B. Armour, Wayne H. Cutler, George B. Patrick and Chris A. Schmitt to Field Service Engineer . . . Charles L. Battle, James E. Evans, John E. Hartman, William G. Lawrence Jr., Billy D. Matthews, John A. Moore, Charles B. Powell Jr., Steve R. Riddle, Donald A. Sabo and Perry D. Whitten to Project Engineer . . . Robert J. Beckman to Manufacturing Technology Supervisor . . . Gregory S. Bennett to Procurement Chief . . . Joe O. Bishop, Curtis W. Dickenson, Jeffrey M. Kwargsick, Thomas W. Solter, Louis W. Strack Jr., Alfred B. Wettermark and George Zizzo to Engineering Chief . . . John D. Breeding to Production Test Chief . . . Flora A. Brewer to Human Resources Chief . . . Donna K. Collins to Plans and Controls Chief . . . Paul L. Crabtree to Senior Financial Analyst . . . Bobby J. Cross and Jerry W. Dearman to Logistics Engineer . . . Alvin E. Darroch and Jon A. Gatewood to General Foreman . . . Don W. Dearnore and Edward D. Gerik to Program Specialist . . . Vernon L. Denena, M. Guleyupoglu, Joseph H. Player Jr. and Dennis M. Rigney to Principal Field Service Engineer . . . Jack E. Eatherly to Material Planning Supervisor . . . Gordon W. Fuqua to Estimating Manager . . . Edwin H. Goodman and James L. Hodgkins III to Manager of F-16 Programs . . . Leonard G. Jones and Jerry P. Oates to Project Manager . . . Nelson W. Kaiser to Human Resources Supervisor . . . Bradley E. Kenny and James C. Rosa to Senior Field Service Engineer . . . Vaclav E. Kracmer and Steven C. Sowers to Material Program Administrator . . . Gary E. La Gray to Manufacturing Control Supervisor . . . George R. McCarter to Material Cost Chief . . . Michael D. Morgan to Senior Scheduler . . . Carol A. Rice to Engineering Administrative Group Supervisor . . . Steven A. Smith to Material Supervisor . . . Johnnie L. Stegemoller and Alex V. Wolfe to Engineering Program Manager . . . Gary L. Stevens to Estimating Manager . . . Mike D. Stewart to Manufacturing Technology Chief . . . Justin D. Tackett to Production Specialist . . . Richard W. Thornton and Roy B. Woolsey to Purchasing Agent . . . Jesse L. Yarborough to Quality Assurance General Supervisor.

Convair: Scott S. Blanck and Keith W. Long were promoted to Manufacturing Control Operations Supervisor . . . Harvey J. Lang to Manufacturing Operations Supervisor . . . Kurt A. Newman to Plant Services Operations Supervisor . . . Byron R. Smith to Quality Assurance Group Engineer . . . David C. Snyder to Group Engineer . . . Allan A. Southard to Manufacturing Engineering Operations Supervisor.

Space Systems: Ramon E. Anspach, Dale M. Balu, Frank P. Coria, Charles W. Fenske, John C. Karas, Spencer H. Maynard, James M. Rager, Charles E. Weingartner and William E. Witzell were promoted to Engineering Chief . . . James A. Cleghorn to Procurement Chief . . . Emil E. Franke to Quality Assurance Group Engineer . . . Larry B. Ghilmore to Master Scheduling Chief . . . Harold L. Hahn, Carlton W. Leonard and Theodore T. Shamshoian to Senior Engineering Specialist . . . Frederick D. Kuenzel to Engineering Manager . . . Clarence F. Stover to Master Scheduling Manager.

Electronics: James A. Sikora was promoted to Engineer.

Electric Boat: William Graber was appointed to Radiological Control Director . . . Victor Sosin was promoted to Radiological Control Manager . . . John Matthews to Quality Manager . . . Eric Isbister and James Smith to Engineering Chief . . . Tracy Coveyou to MARF/SGG Site Manager . . . Andrew Blayman to Traffic and Transportation Senior Supervisor . . . Jerome Chadwick, Anthony Croce, Arthur Geyer, John Medrano, John Sior and Wilburn Stone to Group Trade Planner . . . Gary Felt to Human Relations Chief-Site . . . Peter Gauthier to Quality Audit Supervisor . . . John Grispio to Purchasing Agent . . . James Herring to New Business Funds Compliance Staff Specialist . . . William Jones to Ship Superintendent . . . Mark Law and Janet Linderson to Foreman . . . Charles Nixon to Construction Superintendent-Site . . . David Saunders to Transportation Supervisor . . . David Vetelino to Engineering Administration Supervisor. At Quonset Point, Howard Turner to Production Methods Engineering Supervisor . . . John Letz and David Stafford to Group Trade Planner . . . Arthur Snow to Foreman III.

Valley Systems: David L. Heffron was appointed to Director of Division Planning & MEP . . . Ronald L. Tuley to Director of Productivity and Competition Advocate . . . Ronnie D. Abbott was promoted to Senior Project Engineer . . . Selma C. Castaneda to Departmental Administration Manager . . . David N. Miller to Quality Assurance Project Administrator . . . Mary D. Ankeney to Product Line Manager.

Land Systems: Henry R. Domec was appointed to Technical Support Director . . . Andrea S. Stamps was promoted to Records Supervisor . . . Isaac J. Floyd to Skilled Trades Maintenance Foreman . . . Richard G. Haswell to Financial Analysis Chief . . . Carl E. Engle to Production Engineering Chief . . . Clyde R. Bunting to Senior Engineer . . . John C. Butterworth to Technical Writing Supervisor . . . George C. Weber to Principal Engineer . . . Chris G. Nacu to Project Engineering Assistant . . . Paul Schossau to Engineering Services Chief . . . Alan E. Frysinger to Chief Administrator . . . Warren A. Lunetta to Maintenance General Foreman.

GDSC: Benjamin E. Bunch was promoted to Engineering Chief . . . Jeanne M. Behr to Estimating Manager . . . Raymond Stefanik to Flightline Group Leader . . . John H. Henkens to Workshop Branch Leader . . . Billy G. Spence to Flightline Branch Leader . . . Thomas E. VanMameren to Project Engineering Assistant . . . Kevin R. Austin, Noal D. Farmer, John R. Hashman, Harold E. Meyer, Stephen O. Mitchell, John Pachuca, Bobby W. Potts, Lee C. Randall and Brian C. Vaughn to Senior Aircraft Specialist.

Data Systems: At Western Center, Kenneth H. Showalter was promoted to Computer Systems Specialist . . . Helen A. Fife to Senior Programmer/Analyst . . . Marc T. Daniels and Donald G. Alberstadt to Software Engineer . . . Monica R. Lewis to Communication Analyst . . . Carolyn S. Maxkom and Jed G. Carnaje to Associate Software Engineer . . . Gregory K. Mink and Robert A. Draper to Engineering Software Supervisor . . . Dewitt C. Gifford Jr. to Financial Control Chief. At Central Center, Charles W. Scroggins to Engineering Software Supervisor . . . Janice M. Schauwecker, M. Diane Simpson and Ronald B. Wooten to Financial Control Chief. At Eastern Center, Kenneth Packer was appointed to Computer Services Director . . . Harold H. Stoddard Jr. was promoted to Information Resource Management Manager . . . Patricia E. Chevrier to Business Systems Development Supervisor . . . Nels C. Youngstrom to Computer Systems Specialist . . . John L. Brychey to Property and Material Manager . . . Lee Warren to Quality Assurance Manager . . . Stephen B. Sawtelle to Teleprocessing Manager . . . Charles F. Hobbs to Business Systems Development Chief . . . Mary E. Mulligan to Business Systems Development Finance and Administrative Applications Chief . . . Carl M. Izzo to Business Systems Development Payroll and Personnel Systems Supervisor . . . Randy S. Black to Business Systems Development Finance and Accounting Systems Supervisor . . . William M. Murakami to Business Systems Development GDLS/MRP Supervisor . . . Timothy J. Slusser to Site Manager at Land Systems.

Curtis Garvin Swims to Train for Grueling Marathons in San Diego

When Curtis Garvin, a programmer analyst at Data Systems Division-Western Center, trains for a marathon, he swims laps to strengthen his upper arms. He needs strong arms to push himself and his 26-pound wheelchair through the grueling 26 miles of a marathon.

Garvin, who was almost killed in an automobile accident in 1980, now gets around by wheelchair. However, it has not kept him from racing in a total of seven marathons and countless 10K runs.

A collision with a spectator during the Heart of San Diego Marathon in December prevented him from achieving his goal of his best marathon time ever.

"At about Mile 3, I was going fairly fast during a downhill part of the race," said Garvin, "and a woman started to cross the street in front of me. I yelled, and she jumped out of the way, but I clipped her with my arm as I went by." Not until he reached Mile 20 did he realize he was in pain from something other than the strain of pushing the wheelchair.

"I didn't know if I could finish the last six miles," he said. But finish he did — in two hours 50 minutes, which was 20 minutes more than he had planned but still good enough for sixth place in the wheelchair division. A medical examination showed later that he had injured a muscle and had fractured a bone in his wrist.

This was the fourth time Garvin had raced in the Heart of San Diego Marathon. As a member of a racing team sponsored by a local restaurant chain, he participates often in team competitions. His team, composed of world-class racers, meets regularly to select monthly competitive events throughout the Southwest.

This year Garvin also served on the Heart of San Diego Marathon committee. He represented all wheelchair athletes to make sure their special needs were met, including



Determined Racer. Curtis Garvin is shown above racing in his wheelchair and being interviewed at work by KGTV's Mark Walton (hands in pockets).



everything from course modifications to special accommodations and airport pickups for out-of-town racers.

Several weeks before the race, Garvin was filmed and interviewed at work by KGTV, a San Diego television station that covered the marathon. Sometimes Garvin does not feel comfortable in the spotlight, but he realizes that he is a positive role model for disabled people, he said.

"It's important to show disabled people in the mainstream," he said. "I work at a regular job and train and compete in races in my free time."

Finishing December's marathon with an arm injury

means he will have to take some extra time to recover fully. It will be another month or so before he can train again. Then he will resume 10K races and will be back for next year's Heart of San Diego Marathon.

Meanwhile, he spends some of his free time at several local hospital rehabilitation units counseling people like himself who have been severely injured in accidents.

"There's a chance that someone who has been banged up in an accident will say to a regular physical therapist, 'You don't know how I feel.' Peer counselors can bridge that feeling," Garvin said.

Value Engineering Suggestions Get Big Boost From New Awards Program at Land Systems

A recently initiated awards program has inspired Land Systems employees to submit Value Engineering ideas at record levels.

"The employee award program has served as a catalyst to increase the submission of Value Engineering ideas by 30 percent over the same period before its start in July 1986," said William L. Collins, who is coordinating the Value Engineering awards program for Land Systems.

Successful Value Engineering ideas are those accepted both by Land Systems and the government and contractually authorized for implementation. Land Systems and the government share in the savings derived, and Land Systems rewards employees who submit successful ideas with merchandise awards.

During the 1986 fiscal year, the government lauded Land Systems for saving the Army \$32 million through Value Engineering and industrial productivity improve-

ments.

"This savings allows the Army increased acquisition dollars, which result in enhanced job security for all defense employees," said Collins about the long-range tangible benefits of successful Value Engineering.

A. William Carion, Land Systems Vice President and M1 Program Director, congratulated the Value Engineering staff for achieving a 25 percent reduction in the backlog of ideas during a month when submittals were double the previous rate.

"The current backlog of ideas will soon be cut in half, allowing for fresh ideas to enter the change processing system," Collins said. "Coupled with the increased success rate of government approvals, these new ideas will enable Land Systems to achieve the savings goal mandated by the government while at the same time increasing revenue and rewarding employees."

Company Announces Sale of DatagraphiX To Anacomp, Inc.

General Dynamics and Anacomp, Inc. of Indianapolis, Ind., announced Feb. 3rd that they had signed a definitive agreement for the purchase by Anacomp of General Dynamics' DatagraphiX subsidiary. Terms of the agreement were not disclosed.

General Dynamics announced its intent last October to sell DatagraphiX, saying that the company was "not fundamental" to its plan to give priority to its aerospace and defense lines of business. Louis P. Ferrero, Anacomp President and Chief Executive Officer, said that the combination of Anacomp and DatagraphiX brings together two leading firms of complementary disciplines in the rapidly growing micrographics industry, creating one full-service company able to meet the complete micrographics and information output needs of a broad spectrum of customers.

DatagraphiX, a San Diego-based manufacturer of computer output microfilm (COM) equipment and high-speed, non-impact page printers, has been part of General Dynamics since 1968. It currently employs 2,500 persons and reported 1986 earnings of \$10.1 million on sales of \$239 million.

Anacomp is an information management company which provides micrographics services, computer software, on-line processing, data systems and other information services to banks, credit unions, large industrial users and a variety of other customers throughout the United States. Anacomp Common Stock is listed on the New York Stock Exchange.



Company Float Wins First Place. Employees of the Abilene Facility in Abilene, Tex., are shown with a float they built recently for the West Texas Fair parade. The float sported 3,000 paper flowers and carried large models of some of the General Dynamics products the Abilene plant is associated with as a supporting machining operation. The float also celebrated the 150th anniversary of the founding of the Republic of Texas. When the float won the parade's grand prize, the employees donated their winnings to a medical rehabilitation center, which earned them an editorial salute from the Abilene Reporter - News.

Energy Saving Award Honors Land Systems

Land Systems recently received an award from the U.S. Army in recognition of Lima Army Tank Plant employees' efforts to save energy. The division also received a check for \$50,900 that represented one third of the plant's documented energy savings from March 1985 through February 1986.

Lt. Col. Elton D. Minney, Plant Commander, lauded Robert Monroe, Cross Services, "and the people he works with" for their success in energy conservation. He also thanked employees on the factory floor for their efforts to help the plant meet its energy saving goal.

Col. Stephen M. Bliss, Chief of the Army Energy Office, presented the award to G. (Dino) Salvador, Plant Manager, who accepted it on behalf of Land Systems.

Citation III Smashes 1983 Speed Record From Wichita to Paris

The first Cessna Citation III business jet delivered to France established unofficial speed records for its class on its delivery flight from Wichita, Kan., to Paris, France.

Gerard Pommier of Euralair International reported a total flight time of eight hours and 25 minutes from Wichita to Le Bourget Airport in Paris. That is one hour and 18 minutes faster than the time recorded by a Citation III that established an official speed record during a flight to the Paris Air Show in 1983.

Pommier also reported three hours and 45 minutes from Wichita to Gander, Newfoundland, and four hours and 40 minutes from Gander to Paris. That compared to the official 1983 performance of four hours, 30 minutes, and five hours, 13 minutes, respectively.

The Euralair crew flew at flight levels from 41,000 to 45,000 feet during the 4,255-nautical-mile trip and reported total fuel consumption of 11,560 pounds.

Euralair International, based in Paris, is the largest operator of Citations in France, with four of the planes. The Citation III will be used in Euralair's large charter operation throughout Europe.

The Citation III, Cessna's largest business jet aircraft, received its French certification last October and is now certified in 12 countries. More than 120 Citation IIIs have been delivered since January 1983, establishing it as the best-selling aircraft in its class during the past four years.

Company to Support Lima, Ohio, in Block Rehabilitation Project

General Dynamics has committed a \$50,000 grant to Rehab Project of Lima, Ohio, for the rehabilitation of almost an entire block of houses on Eureka Street.

Rehab Project is a nonprofit organization dedicated to bringing neighborhoods back to life and placing resident homeowners in them.

The grant, made through Land Systems in Lima, will be used to underwrite the interest cost on construction financing and to support Rehab Project's administration of the development.

Rose Marie Duffy, president of the Rehab Project Board of Trustees, said that the purchase, rehabilitation and resale of 25 single-family dwellings is the largest concentration of units Rehab Project has been able to assemble for redevelopment.

Rehab Project owns 21 houses on the block and is negotiating with absentee owners for four others. One other home on the block is owned by the resident who will be offered assistance to upgrade the house if desired. Renters living in about half of the houses will be offered the first chance to buy the rehabilitated buildings if they wish, or be given relocation assistance if they do not.

Renovation started in February and will take about two years.

Material Service Managers Speak on Concrete in China

Two Material Service Corporation employees recently presented a series of lectures in China on concrete technology.

John Albinger, General Manager of Technical Services, and Jaime Moreno, Manager of Technical Marketing, were invited by several Chinese universities to speak on high-strength concrete and the structural development of Chicago high-rise buildings. Moreno also presented these topics at the South Pacific-Asian Concrete Conference.

"China is looking to us for help in developing its technical expertise," Moreno said.

Both men have lectured throughout the United States, Europe and South America on various aspects of concrete production and structural design.

Mulrooney Elected

Joseph P. Mulrooney, Vice President of Real Estate for Material Service Corporation, has been elected President of the Chicago Chapter of the International Association of Corporate Real Estate Executives.



F-16 Launches Penguin Missile. A U.S. Air Force F-16A from the Air Force Flight Test Center at Edwards AFB, Calif., recently launched a Penguin antiship missile at Point Mugu, Calif. The aircraft, the F-16A/B Operational Capabilities Upgrade (OCU) test airplane, is shown above carrying two of the missiles. Penguin was developed by the Royal Norwegian Air Force and is produced by Kongsberg in Norway. The successful test flight and launch were conducted under the F-16A/B OCU program, which is sponsored by the USAF and the air forces of Belgium, Denmark, the Netherlands and Norway.

Two Fort Worth Engineers Prepare Brochure For Middle School Math, Science Teachers

Fort Worth recently sponsored a seminar designed to help math and science teachers with the sometimes difficult job of making those subjects seem interesting to secondary school students.

Two engineers who worked on the project, Wesley T. Beard and Jim M. Phillips, used a secret weapon — the F-16 — as a vehicle to achieve the objective. "We knew that youngsters have an innate curiosity about high performance aircraft, so we decided to give the teachers some examples to take back to class — such as how math and science are used on the F-16 program," Beard said.

Beard, a program manager in Support Requirements and Systems, and Phillips, a project engineer in the F-16 International Project Office, put together a brochure that relates concepts used in the design and manufacture of aircraft to similar concepts being taught in middle school earth science, life science and mathematics text books. Co-workers assisted them in selecting and preparing 30 illustrated examples which are referenced to the text books by page numbers.

The brochure was shown to teachers in a session offered as part of the Region XI Middle and High School Mathematics and Science Teacher Workshop. The workshop was hosted by Fort Worth in cooperation with the Fort Worth Alliance for Minorities in Engineering and the Dallas/Fort Worth Metroplex Alliance for Engineering Education.

About 85 teachers from four public school districts and two private schools in the Fort Worth area attended.

Two other division employees, Barbara Bormann, a senior engineer in Aeroanalysis, and Anna Garcia, a senior engineer in Head-down Displays, participated in a panel discussion on women in engineering at the day-long event.

In addition to Fort Worth, nine other companies participated by submitting examples of how their industries use math and science.

Steve DeLeon, of Fort Worth's Engineering Personnel Department, coordinated the division's participation. DeLeon said the material presented at the workshop was well received by the teachers, many of whom said that they plan to use it in their classes.

All teachers attending the workshop received advanced academic training credits from the Texas Education Agency. "As far as we know, this was the first industry-sponsored training that the agency has approved for credit," DeLeon said.

Phillips said it took time to search out good examples of aerospace concepts for the middle school level when preparing the brochure. The brochure cites examples involving fuel tank volume, wing loading calculations, drag chute functioning and many other applications of math and science.



Teaching Aid. Fort Worth engineers Jim Phillips (left) and Wes Beard discuss brochure they prepared as supplemental instructional material to be used by middle school mathematics and science teachers. The brochure includes 30 examples of concepts used in the design and manufacture of aircraft, cross-referenced to similar concepts being presented in school text books.



Division Cooperation. Teamwork and cooperation between Land Systems and Data Systems Division made possible the successful implementation of Phase I of MRP II. In photo at left, Bernard J. Breen, Vice President-DSD, congratulates Robert W. Truxell, Vice President and Land Systems General Manager (center). Michael M. Grujcich (right), MRP II Program Director, leads the MRP II team, which is composed of employees from all functional organizations. In photo at right, Monty W. Dickinson, Land Systems Vice President of Material, reviews the data input form for bill of material updating with Rose Snider, Bill of Material Analyst.

Land Systems Is Centralizing and Integrating Information Systems

Land Systems is implementing Manufacturing Resource Planning (MRP II) to replace several stand-alone information systems with one centralized, integrated source of information. MRP II will be the foundation for future management reporting systems, division long range planning and computer integrated manufacturing.

MRP II will enhance Land Systems' current manufacturing and material methods by providing an integrated, closed-loop data base of consistent and valid information. It will eliminate data redundancy and provide multiple plant integration by initiating the planning of parts by plant. The outdated systems it replaces required different departments maintaining the same information in their own systems to perform their functions. MRP II will provide one set of records for all departments to use and eliminate the balancing problem of many sets of records with the same information.

Since MRP II allows everyone to work from one common plan and share common integrated information, any action, or lack of action, will be immediately visible to all departments for their individual response.

Begun in October 1983, MRP II was established as a separate function, reporting directly to Robert W. Truxell, Vice President and Land Systems General Manager, with an advisory steering committee composed of all division vice presidents.

A team led by Michael M. Grujcich, MRP II Program Director, was manned by personnel from all Land Systems functional organizations and from disciplines within each organization. A complementary project team from Data Systems was created by Bernard J. Breen, Vice President, Data Systems Division - Eastern Center.

The first task was an intensive education of broad-based MRP II philosophy and concepts and specific software module training. Through this learning process, both Land Systems and Data Systems team members realized the extent to which each depended on the other for project success. This need for a cooperative effort was communicated to every level of the user community.

"We have realized dramatic improvement in interdepartmental communications since the beginning of this project," Grujcich said. "People are becoming more and more aware of the impact their work has on others and the value of maintaining accurate information."

Working together, the team defined system and user requirements, established policy definitions and enacted procedures.

In October 1986, Phase I of MRP became operational throughout the division. It included four interactive software modules: Bill of Material, Inventory Control, Purchasing, and Accounts Payable. A fifth module, Material Requirements Planning, will be operational in early 1987.

With MRP II, Land Systems introduced the process of building tanks using manufacturing orders, never before implemented within the division. Manufacturing orders require that parts are scheduled, manufactured, issued and stocked according to specific orders, providing improved visibility and control of configuration and work-in-process inventory. The production schedule for each part within a tank is based on the needs and production parameters of that part.

"MRP II means working to the right priorities to meet quality and schedule objectives," said Robert F. Schwalm, Land Systems Vice President, Manufacturing. "It means anticipating bottlenecks in the manufacturing process months in advance and using the correct part in the correct job in the correct work center."

Procurement and Accounts Payable share a common on-line file, thereby improving controls and ensuring valid payments to suppliers. This consistency avoids duplication of payments, and billing errors will be discovered early in the payment process.

Suppliers to Land Systems are educated in MRP II concepts and are required to ship to purchase order schedules. This activity ensures that materials are available to support the manufacturing schedule and customer orders.

Project Process Reviews, a format innovated by the Material Department, were conducted to explore the new administrative and operational procedures under the MRP II system. The review brought together all key employees and top management within a functional organization in an open forum to identify the MRP II impact and to assist in a smooth transition. All other functional areas were invited to attend Project Process Reviews to aid the total communication and transition process. The manufacturing and financial organizations also conducted process reviews using the same open format and achieved similar results.

The process review concept has aided user understanding of the system, helped to dissolve departmental communication barriers and illustrated that each functional organization is dependent on the other departments' input to the system and is accountable for its own input. The accuracy and integrity of data stored and processed on the system, critical to MRP II, was addressed early in the project with the division goal set at 98 percent. Each organization identified and rectified information before loading data into the MRP II system.

Project team members trained the chiefs in each functional area, and they, in turn, trained the primary users. Supported by the Land Systems Technical Training Department, the MRP II team developed course materials, user guides and additional reference materials into 12 specific training courses. (Education in all functional areas will be a continuing process.)

The training process upgrades the skills level of division personnel and introduces them to a new technology. "Our jobs will change, but for the better," said Monty W. Dickinson, Vice President, Material. "They are enhanced by training that is conducted in those areas where MRP II impact is most critical."

A significant alteration in the way of doing business is the work cell concept implemented to process engineering changes for production and to conform to MRP II system requirements for change implementation. "Information is communicated quickly and accurately to the MRP II system through the bill of material," said A. William Carion, Vice President and M1 Program Director. "This facilitates management's ability to render decisions armed with valid information."

Before turnover of the MRP II system to the division users, a production simulation/acceptance test was con-

ducted. Goals of this test were to simulate a real production environment and the ability to respond to changes and to adequately exercise the system. Test criteria were developed to incorporate all these objectives and to provide users with the necessary reports. All division locations participated in the test with daily increasing volumes and transactions.

To evaluate both the system performance and the users' ability to handle the system, an executive review team visited every location to observe and audit the test activity. Action items identified during the week-long test were either immediately resolved or assigned specific dates for completion.

The final responsibility of the executive review team was to present a "Go / No Go" proposal for system turnover. On Oct. 1, 1986, the decision was made to proceed with loading the production data base and system turnover. The MRP II system was operational for production users on Oct. 27th, and all processing on the previous system was discontinued on Nov. 7th.

In the second operating week of production on the MRP II system, the executive review team conducted the same review process at all Land Systems plants. "Management involvement and support is a major factor in a program of this magnitude," said Breen. "This visibility encourages the user to succeed."

Truxell charged Land Systems personnel and representatives from Peat, Marwick, Mitchell and Company to perform a thorough review of the MRP II system to assure compliance with customer contract reporting and audit requirements. This review resulted in a comprehensive matrix of the contract required specifications which govern the application of MRP II in meeting DoD's needs, as well as identification of any apparent omissions or weaknesses in the system.

"The conclusion of Phase I implementation will mark a major accomplishment but, we recognize that it is only an initial step in a longer journey to improve the administrative process," Truxell said. "Future phases of MRP II implementation will close the information loop and feedback apparatus necessary to modernize administrative performance."

The Financial Reporting System will coordinate and consolidate information in a centralized General Ledger System. General Ledger became operational in January 1987 and includes a Cost System scheduled for full implementation in June 1988.

A Shop Floor Control System will form the basis for tracking all elements of the manufacturing process to an operational level. Shop Floor Control will begin running a pilot program in one department in March 1987. Full division implementation is scheduled for completion in March 1988. Working in concert, the Cost System and Shop Floor Control will provide Land Systems with the capability to value work more accurately in process inventory.

Master Production Scheduling and Accounts Receivable will complete the total loop in MRP II implementation.

"MRP II is the key business system in preparing Land Systems for success in a defense industry that is becoming more competitive every day," Truxell said.

Two General Dynamics Employees Had a Part in America's Cup Victory

Two General Dynamics employees with a vested interest were among the Americans this month who cheered proudly as the 12-meter racing yacht *Stars & Stripes* beat the Australians for the America's Cup.

John Engle, an estimator with the Electronics Division, and Ron Davis, Space Systems Industrial Security Manager, played major roles in the successful drive to bring back the cup, through their volunteer work with Sail America, the fund-raising organization for the victorious *Stars & Stripes*.

Stars & Stripes early this month beat the Australian finalist, *Kookaburra III*, 4-0 to win back the cup. She was skippered by San Diego's Dennis Conner, whose late father was a career employee at Convair.

Progressing through the challenger series that began in October, *Stars & Stripes* in January bested New Zealand's *Kiwi Magic* and climaxed its challenge by beating *Kookaburra III* in the best of seven series ending Feb. 4th.

Engle volunteered with Sail America in 1985. His work was so effective he was asked to become the assistant marketing director for the remainder of the campaign. He took a six-month leave of absence to work full time, coordinating speaking engagements, special events and other activities to help reach Sail America's fund-raising goal of \$15 million.

Engle became interested in sailing about seven years ago, and just last year decided to combine his sailing experience with fund-raising. As a member of the San Diego Yacht club — the challenging syndicate for *Stars & Stripes* — Engle worked with Sail America President Malin Burnham to form a fund-raising group patterned after Sail America's "1000 Club" of major supporters. Since Engle had relatives in Phoenix, Ariz., who owned boats, he organized the Arizona Council of the 1000 Club and raised more than \$50,000 as a volunteer.

"I wouldn't have given volunteer time if I were not confident Conner would win," Engle said. "He had more than 8,000 hours of 12-meter sailing experience — more than any other challenging skipper."



Yachtsman Dennis Conner (left) and John Engle



Ron Davis Designed the Security Plan for Dennis Conner's Victorious *Stars & Stripes*

James Rolston, Engle's supervisor at Electronics, worked for many years with Conner's father, Paul, in the Estimating function at Convair. "From what I hear about Dennis and his drive to win back the cup," Rolston said, "he's just like his father — a hard worker with total dedication and attention to detail."

"*Stars & Stripes* was a technologically superior boat," Engle said. "The design team has used U.S. space technology, and computer systems had tested hull designs for more than two years."

The *Stars & Stripes* design effort, according to Ron Davis, called upon a variety of experts from hydrodynamicists to computer wizards.

"Because of the high-tech advantage of the winged keel design on the Australian boat that won in 1983," said Davis, "Dennis knew that the whole concept of 12-meter racing had been altered forever." At the outset, Davis said, Conner wanted to set up a sophisticated security program to protect the work of the designers throughout the entire process, which began in early 1984.

Davis, also a member of the San Diego Yacht Club and a sailor, was asked by Conner to plan that program, drawing heavily on his experience with Department of Defense security programs.

"Essentially, my security plan was modeled after special access programs for the DoD," said Davis, "whose objective is to protect developing technology from being stolen by adversaries or competition."

In addition to formulating the overall plan, Davis did security surveys at all of the design, testing and manufacturing facilities. He also set up security procedures for the Hawaii training camp and the Perth facility, as well as a badging system for the *Stars & Stripes* crew.

"Hawaii was critical," said Davis. "We were guarding against someone observing the design of the boat." He came up with the idea of painting all of the boats alike (four were built or modified) so it would be harder for observers to tell which design was fastest.

Davis' final security task is to design a protective device for the America's Cup, a large, ornate piece of Victorian silver, with the help of a consultant from the Smithsonian Institution. Because the drive to bring the cup back was a national effort, Dennis Conner promised that it would not be locked away but would be available for the American people to see.

Davis accompanied Conner, crew and cup when they went to Washington, D.C., for the reception hosted by President Reagan. He was responsible for security there and at festivities in New York.

Stars & Stripes' victory has generated a great deal of enthusiasm in San Diego as well as a feeling of national pride, Engle and Davis agreed.

"America had always been ahead," said Engle. "In 1983, Australia took the lead, but we always intended to win back the cup," he said. "What's more American than being first?"

Engineering Chief Charles W. Smith Rides Tall in Polo Pony Saddle

Charles W. Smith, Chief of Aeroanalysis in Fort Worth's Engineering Department, almost fits the storied image of the typical Texas horseman.

Smith was raised in San Antonio and can remember being on a horse's back before he can remember walking. He is an expert rider and trainer and currently owns several horses.

What he does with the horses sets him apart from the Lone Star stereotype, however. Instead of trail riding, cattle punching or competing in rodeos, Smith uses his horses to play polo.

"Polo has been a pretty exclusive sport in the past, but that's not really true today," said Smith. "Anyone who can afford to keep a horse can also play polo, at least on a weekend basis."

For Smith, polo is a family tradition. His father, Cecil Smith, who is now in his eighties, has been called a living legend of polo. The one-time cowboy made his living by playing polo and training horses for most of his life, dominating professional circuits throughout the United States and the world for more than 25 years.

Charles Smith has been playing polo for 25 years. His son, Matthew, is continuing the tradition through a third generation by playing on a polo team at the University of Texas.

When Smith first joined the company and moved to north Texas, about 20 years ago, polo was played by a small group of people in Dallas — but by virtually no one in Fort Worth. "Today, there are about 20 men and women playing polo on a 'club' basis — just for fun — in Fort Worth," Smith said. "Some have their own horses, but others lease horses."

In April and May, Smith will play indoor polo — a modified version of the game — in a league at Will Rogers Coliseum in Fort Worth. This will be the league's second



Fort Worth's Charles Smith, in Polo Jersey and Helmet, with One of His Mounts

indoor season, and Smith is hoping for growth in its popularity. The Fort Worth team, with Smith as its captain, won the National Polo League's indoor championship last year.

"We had five indoor games last spring," he said. "There weren't too many people at the first one, but by the end of the season we were attracting a crowd of about 3,000."

"The level of play in the indoor games is very high quality, featuring some of the best players in the country," he said. "Indoor polo seems faster than the outdoor games, because the playing field is smaller and the ball can be played off a wall that surrounds the field."

The indoor fields are about one-third the size of a regular outdoor field, which measures 300 yards by 160 yards. Each indoor team has three players, compared to the usual four to a team in the traditional outdoor version of the sport. The balls that are used indoors are inflated, rather than solid.

An indoor game has eight periods lasting five minutes each, compared to six periods lasting seven-and-a-half minutes in the outdoor version. In both versions of polo, players change horses each period to prevent the animals from becoming exhausted. The horses used are mostly thoroughbreds, because they have greater stamina than quarterhorses and most other breeds.

Smith is considered one of the best polo players in the country and has won the two premier events, the National Open and the Silver Cup/20-Goal, five times and six times, respectively. He also has won many other tournaments and has been selected to represent the United States in international competition with Mexico, Argentina and England.

Overseas Assignments Bring Challenges and Responsibilities By Joe Stout

International business is becoming increasingly important to General Dynamics; last year the company did \$1.4 billion worth of new international business. Following is the first of a number of stories on the company's international operations that will appear in General Dynamics World. Others will be published in the coming months.

Fred G. Foerster and Joseph A. White, two Fort Worth employees who recently returned with their families from company assignments in Israel, found some different and some similar advantages to family life abroad as representatives of General Dynamics.

For Foerster, who lived in Jerusalem with his wife, Florine, and their daughter, 11-year-old Helene, the opportunity for new experiences and travel was a major advantage of an extended overseas assignment. His memories include such diverse activities as scuba diving among coral reefs in the Red Sea, hiking in the hills of the Dead Sea area and photographing elephants and other animals on African ranges during a vacation safari in Kenya.

For White, who lived in Caesarea, Israel, with his wife, Hazel, and two teenage children, Stephen and Christi, the opportunity to visit locations famous in archaeological, political and religious history was a major benefit of life in the Holy Land. "It is fascinating to visit actual historical sites and relate the feelings and surroundings of those places to names that you have read and heard about all your life," he said.

Both employees said their families were happy with the quality of life they had during their assignments, such as the employees' work, their living accommodations, schools, the weather, friendships and other factors. "It was a very good time for us," said White. "In addition to our son and daughter who were in school in Israel, my wife and I have four older children in the United States. All of



Camel Ride. Helene Foerster, daughter of Fort Worth employee Fred G. Foerster, rides a camel at a site outside Jericho in Israel.

Although they lived in different regions of Israel, the two employees give similar descriptions of their families' accommodations. "A few things that we are used to in the United States were lacking, but nothing major," said White. Their residences were fully equipped with appliances, but the types and models of some varied from those in the United States. For example, White said the clothes washers and dryers had smaller capacities than American models.

Entertainment, in English, was also available, they said. "First-run movies in English were in the local theaters and, where my family lived, we could watch many current American television programs on a channel that broadcasts in the region," said White.

Foerster said his family watched BBC programs on a Jordanian station. However, both said their families spent less time watching television than they had in the United States. "We found plenty of other things to do," Foerster said.

In describing the foods available in Israel, the two said only minor adjustments were needed in their daily diets. Meat tends to be more expensive there than in the United States, but fruits and vegetables are plentiful and cheaper. "The produce is tastier than what you get in American supermarkets," said Foerster. "We'd buy avocados, plums, peaches and strawberries at open markets. You've never

tasted strawberries like they have in Israel." Fresh strawberries are available there from early December until late May.

Shopping was different from in the United States because meats, vegetables and other items are usually purchased in different stores, the employees said. "There were a few supermarkets, but not many," White said. They also had U.S. Embassy shopping privileges, which allowed them to buy some American products that could not be found in the Israeli stores.

"The main challenge, in shopping, was getting used to the store hours," White said. "Most stores were closed for an hour or two in the afternoon, for lunch. Also, they were closed all afternoon on either Tuesday or Wednesday depending on the town or village. On Friday, they closed at noon and didn't reopen until Sunday, since the Sabbath is observed on Saturday," he said. "Sometimes it took a little adjusting to plan a day in town or a weekend trip."

A side benefit of living overseas was that it brought their families closer together, both men said. "It was a joint family experience," Foerster explained. "We did everything together."

Foerster described his assignment in Israel as a tremendous learning experience for his daughter. "With the traveling we did before we went to Israel and while we were there, Helene has been in 24 different countries," he said. "Near our home in Jerusalem, one of her favorite activities was riding a camel at a local park. In fact, I think she must have arranged to ride every camel in Jerusalem, at one time or another," he joked.

One of White's sons graduated from high school in Israel. "The school is excellent, with a very thorough curriculum," he said. "It is called the American School, but had students of more than 30 different nationalities, which was a good cultural experience for my son. He played on several sports teams and traveled to Egypt with the soccer team on one occasion for a game with the American School in Cairo."

Foerster said he and his family felt very safe in Israel, despite the political tensions of the Middle East. "I wouldn't be afraid for my wife and daughter to walk down the street in Jerusalem at three o'clock in the morning. I couldn't say that about many cities in the United States," he noted.

Both employees said their families found many opportunities to develop friendships in Israel with Israeli citizens, other General Dynamics employee families and employees of other American companies.

White said his family participated in many church activities, including Bible study groups that met in his home on Sundays after work. On Saturdays, they attended services with English-speaking persons of many denominations at Baptist Village, a site near Tel Aviv. Foerster said his family attended Baptist and Lutheran services in Israel.

The employees' host companies in Israel held "going away" events for them before they returned to the United States. Foerster was thanked for his contributions to the Israeli coproduction program at a dinner, and White received similar recognition at a reception held in his honor.

Foerster returned to Fort Worth in the position of Manufacturing Engineer, and White is presently an engineering specialist, leading the design and development of a new avionics test station. Both said they have happy memories of working and living in Israel.



Foerster



White

our grown children, their spouses and our grandchildren visited us while we were in Israel, so our stay there proved to be advantageous for them, too."

While in Israel, Foerster and White were part of General Dynamics' large international work force, assigned in many countries, that makes an important contribution to the company's continued success. "There is one thing about working and living abroad that you are always aware of—you are always representing General Dynamics," White said. "That is an enjoyable aspect, really, because our company is well thought of in most of the nations where we do business."

Foerster and White were assigned to General Dynamics resident offices that oversee work done by Israeli firms holding F-16 coproduction contracts. Coproduction is an important aspect of Israel's agreement for the purchase of 75 follow-on F-16 aircraft, just as it has been in many F-16 sales to other U.S. allies.

Foerster joined Fort Worth as a tooling jig builder in 1977. After becoming familiar with the structure of the F-16, he applied for an overseas assignment because he felt it would provide new challenges and responsibilities, he said. In Israel, he worked as a manufacturing engineer and head of the company's resident office at Israel Military Industries, a firm which coproduces weapons pylons, centerline pylons and wingtip missile launchers for the worldwide F-16 fleet.

White, a Fort Worth employee since 1964, had worked in the Engineering Department and in subcontract management in Fort Worth's Material Department before being assigned overseas. "In subcontract management, I got a feel for the overall F-16 program, which led me to become interested in coproduction," he said. In Israel, White was leader of the company's resident office at Elbit Computers, a firm which produces fire control computers for Israeli F-16s and coproduces components of the F-16 stores management system and multifunction display set.

In describing their jobs overseas, Foerster and White said their main function was to ensure that the coproducers' products met General Dynamics and U.S. Air Force requirements for function, quality and schedule. "We worked side by side with them," Foerster said. "We familiarized them with our engineering drawings and showed them how to use our control tools to build their own tools for production. We also answered technical questions involving the whole manufacturing sequence. When necessary, we referred questions to the proper people in Fort Worth."



Sightseeing in Egypt. Hazel White, wife of Fort Worth employee Joseph A. White, on sightseeing trip their family made from Israel to Giza, Egypt. A pyramid and the sphinx at Giza are shown in the background.

U.S. Air Force F-16s Reached 91 Percent Readiness in 1986

The U.S. Air Force recently announced that its F-16 fleet achieved a 91.3 percent mission-capable rate for 1986. This percentage means that, on the average, about nine out of every 10 USAF F-16s are ready at any time to fly and meet demanding mission requirements.

Maj. Gen. Robert D. Eaglet, Deputy Commander for the F-16 at the USAF's Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio, said, "This high mission-capable rate reflects not only the dedication of Air Force maintenance personnel, but also the quality of the aircraft's basic design. The bottom line is that the F-16 is a fighter we can all count on to be ready to do its job when it's needed."

ASD manages the development, test, production and acquisition of all F-16s.

F-16A/B aircraft achieved an 87.9 percent mission-capable rate during 1986, while F-16C/D models were rated at 93 percent.

General Eaglet noted that, "In the past, many critics claimed that complexities associated with increased performance inevitably will result in poorer reliability for our front-line weapons systems. The improved mission capability rates for the C/D fleet, relative to the earlier, less capable A/B aircraft, provide visible proof that when proper attention is given up front to reliability and maintainability, the readiness and availability of improved systems can be made to exceed their predecessors."

General Dynamics and the other F-16 contractors share the credit for the high rates of readiness, the USAF announcement said. The USAF also recognized the quality efforts of F-16 coproducers.

Company-Sponsored TV Program Features Lyndon B. Johnson

By Chuck N. DeMund

In "Lyndon Johnson," third in the series of Public Broadcasting specials underwritten by General Dynamics, actor Laurence Luckinbill brings to life the triumphs and tragedies of America's 36th President.

The program, to be broadcast in April, is set in the Oval Office of the White House shortly after Johnson announces in March 1968 that he will not seek another term as President of the United States. In flashback, it follows Johnson's career as he wins election to the United States Senate, becomes the ranking Democrat as Senate Majority Leader and then accepts the vice presidential nomination in 1960 to run with John F. Kennedy.

"And the night I became Vice President of the United States I was the most depressed I've ever been in my life," recalls Johnson in the program. "I couldn't help but remember that old story about the mother who lost both her sons — one went to sea and the other became Vice President, and neither was heard of again."

Lyndon Johnson's presidency began with the tragedy of President Kennedy's assassination in Dallas and ended five years later with the tragedy of Vietnam. His odyssey from an impoverished child in Texas to architect of the "Great Society" traversed a road of political campaigns, legislative programs and American soldiers dying in the jungles of Asia. But there was more. There was Lyndon Johnson the relentless reformer, tireless idealist and ruthless pragmatist. And, in the end, there was Lyndon Johnson, the agonized and discredited President, wondering whatever happened to all the grand dreams and ambitions he once held as a young boy in a small Texas town.

Johnson discusses the antipathy of the Kennedy family — specifically that of Robert F. Kennedy — to Johnson's

(Continued on Page 2)

Ethics Hotline Phone Network Is Expanded To Accommodate Personnel-Related Concerns

New Personnel Hotlines will join the existing Ethics Hotlines at all company locations as part of the expanding program of confidential employee communications, according to Arch H. Rambeau, Vice President-Human Resources.

The Personnel Hotlines will be dedicated to dealing with employee relations. As part of the same program, a Personnel Ombudsman will be provided to answer the new hotline and to hear employees' concerns at each location, Rambeau said. Employees at all locations will also be able to call a Corporate Personnel Ombudsman in St. Louis at a toll-free "800" number, just as they can call the Corporate Ethics Director at (800) 433-8442.

"The new hotlines are a result of the large volume and variety of calls that Ethics Program Directors at all locations have been receiving since the Ethics Hotlines began operation last year, as well as a response to some of the concerns expressed in the recent Employee Survey," Rambeau said.

More than 25 percent of the calls received on the Ethics Hotlines last year were about employee or personnel non-ethics related concerns.

"These Personnel Hotlines are dedicated specifically to calls concerning our commitment, as employees, to treat one another fairly and with dignity and respect," Rambeau said. "The hotlines open another avenue to hear and respond to employee relations matters. Of course, the Ethics Hotline will continue to be available to any em-

ployee wanting to use it, regardless of the specific matter involved."

Rambeau stressed that employees can use either the Personnel Hotline or the Ethics Hotline without fear of reprisal. "Taking or threatening reprisal against anyone for using either of the hotlines or for otherwise communicating with the Ethics Program Directors or the Personnel Ombudsmen will not be tolerated," he said.

Phone numbers for company hotlines and for a Department of Defense Hotline to report known or suspected instances of fraud, waste or security irregularities will be publicized on large display panels at all company locations. These displays will begin appearing in the workplaces in the near future.

(See Sample Poster on Page 2)

"Employees are free to use either the DoD Hotline or the General Dynamics Ethics Hotlines, but I hope they will use ours so the company can solve its problems itself," Rambeau said. "Our company commitment is that we will confidentially investigate all allegations to the best of our ability and take corrective action and report to government officials as required."

Another hotline, a Labor Help Line, has been functioning at each company location since late 1986 and will continue to accommodate requests for information regarding completion of time cards and time charging. The Labor Help Lines at the various locations have been receiving a combined total of about 2,100 calls monthly, Rambeau said.



Mrs. Bush Visits St. Louis. Mrs. Barbara Bush, wife of Vice President George Bush, was in St. Louis Mar. 11th to attend a luncheon sponsored by General Dynamics to raise funds for the Morehouse School of Medicine in Atlanta, Ga. Mrs. Bush, a trustee of the school since 1983, is shown with General Dynamics Chairman Stanley C. Pace (center) and Dr. Louis Sullivan, President of Morehouse, at a press conference before the luncheon. Also shown is Sarah S. Austin, Corporate Director of Community Relations and a Morehouse trustee (standing, behind Dr. Sullivan). The luncheon was attended by members of the business, foundation and professional communities.

Employees and Their Managers Are Seeking Solutions to Problems Identified in Survey

Work groups of employees and their managers currently are seeking solutions to the problems disclosed in the employee survey, according to Sue Shike, Employee Survey Project Director.

The employee survey has moved smoothly from the feedback stage to the action planning stage, she reported.

"Employees throughout the company have been working with their management during February and March to suggest solutions to problems identified during the feedback sessions," Shike said.

"Concrete actions are suggested once the problems have been well defined," she added.

Shike said that each company location has taken the action planning format, which was presented in manager training sessions, and has tailored it to the location's particular situation.

Shike said that the work groups have been sharing their recommendations and information with other groups in their division. "As a result of the shared information, some groups have been going back to rework their plans," she said. It is important that each work unit and each management level concentrate for the most part on issues which management at that level can resolve. Many changes

suggested at the work unit level have already been made throughout the company, she said.

"In general, 80 to 90 percent of the action plans that have been recommended are things that the work unit can do," Shike said, "and only a small percentage need higher level attention or policy changes." Even on issues needing higher level review, the work unit is encouraged to implement an interim plan.

Shike said that after each work group finishes its action planning sessions, the manager considers the employee suggestions in developing and implementing his or her action plan. The manager's action plan then is shared with the next level manager.

Shike said that division level plans are expected to be completed beginning in April and, shortly after, will be communicated to division employees. Corporatewide plans will then be addressed and communicated.

"The whole process is designed to open two-way communications to make decisions that will improve company effectiveness," Shike said. "Survey action planning begins an on-going process of employee involvement. Throughout the year, employees will have an opportunity to work on items lower on the priority list initially."

Company-Sponsored PBS Program Features Lyndon Baines Johnson

(Continued from Page 1)

position in the White House. He also speaks of the tragic events of the JFK assassination, his succession to the presidency and his desire to leave his imprint on America — and on American history — through his own personal style.

"I did not want to be the President who built empires or sought grandeur or extended dominion," says Johnson. "I wanted to be the President who educated young children, who helped feed the hungry, who helped the poor to find their own way and who protected the right of every citizen to vote in every election. I hope you will remember what I have done and what I have tried to do."

David Susskind was the executive producer of this program, as well as the "Winston Churchill" and "Ike" shows that General Dynamics presented on PBS in 1986. Shortly before his death on Feb. 22nd, Susskind said that "Lyndon Johnson" was "the best of the one-man shows," a form of dramatic TV presentation that he pioneered. The series has been a strong component of the PBS schedule from the beginning, garnering audiences of nearly five million Americans for each program. Susskind's daughter, Diana Laptook produced "Lyndon Johnson" and Charles Jarrott directed it.

In real life, Luckinbill resembles the late President not at all. On the screen, however, the resemblance is uncanny — the result of a daily three-hour makeup transformation done by Kevin Haney, who did the makeup for the Winston Churchill show. A voice coach from Texas helped with pronunciation and inflection, and Luckinbill studied films and tapes of Johnson to learn facial expressions and body movements.

"I have to admit that I hated Johnson when he was President," said Luckinbill. "I marched on the Pentagon



Actor Laurence Luckinbill in the Role of President Lyndon B. Johnson

and signed petitions calling for his impeachment. But subsequently, as I saw what other Presidents did, and didn't do, I took a reappraisal of his achievements and accomplishments."

General Dynamics is supporting the PBS broadcast with an extensive advertising and promotion campaign. Full page ads will appear in TV Guide, major magazines and in many major daily newspapers. As was done with the previous shows in the series, General Dynamics will

offer 25,000 American high schools a free videocassette of the program and a study guide. A book written by LBJ after he left office also will be offered. More than 8,000 cassettes of the Churchill and Eisenhower programs are already in schools and available to more than eight million students.

"Lyndon Johnson" will appear on PBS stations on the night of Apr. 8th, except in Detroit where it will be aired on Apr. 22nd. Check your local TV listings for the time.

Secretary Lehman Praises Electric Boat As Efficient Contractor

Outgoing Navy Secretary John F. Lehman, in a press conference at the New London (Conn.) Submarine Base on Feb. 20th, said that Electric Boat is today a model contractor with whom the Pentagon has "one of the healthiest relationships . . . that can be found."

Lehman praised Electric Boat's General Manager Fritz G. Tovar for "establishing and maintaining a relationship of total openness and trust and honesty between the Navy and Electric Boat."

The *Hartford Courant* quoted Lehman as saying there was a difference of "night and day" in the submarine procurement climate and that the future for Electric Boat "looks steadily brighter" because it "has gotten more and more competitive and is more and more efficient."

The (New London) *Day* said: "Lehman . . . cited EB as proof of the validity of the Navy's push for competition in shipbuilding. 'The prices of 688s have come steadily down,' Lehman said. 'They cost less today than they ever did before. That is a lesson for all in defense procurement that this kind of relationship and the personal efforts of someone like Mr. Tovar can make a difference.'"

"Workers at EB should be proud of that accomplishment, Lehman said. 'Can Lee Iacocca say his Chryslers are cheaper now?' he asked. 'EB workers can say their subs are costing less.'"

"Despite the recent loss of four 688 submarine contracts by EB, Lehman said the future of submarine construction in general and of EB in particular, is bright. He said superb performance by the shipyard has helped maintain Congressional support so that an average of four subs is being awarded each year, instead of one a year as was the case before 1981."

Regarding the last competition, the *Norwich Bulletin* said Lehman commented, "You can't look at one year. That's what competition is all about." Comparing current circumstances with 1981, he said: "The difference is night and day. We (now) have a relationship of total openness and trust. Electric Boat has gotten more and more competitive and is more and more efficient. The future, I think, looks steadily brighter."

The *Westerly* (R.I.) *Sun* reported: "Electric Boat and the Navy now 'have one of the healthiest relationships between the Pentagon and a defense supplier that can be found,' Lehman contended. 'No small amount of the credit for that should go to Fritz G. Tovar,' Lehman said, for 'creating a policy of total openness and honesty' between the Navy and EB.

"There is 'a lesson for all defense contractors,' Lehman said, in the performance of Electric Boat under Tovar. 'Discipline and competition' coupled with a committed work force has given the taxpayers 'the maximum amount of defense for their dollar.' "

Soviet Hostile Intelligence Threat 'Is Real'

Between 1984 and 1986, 25 people were convicted or pleaded guilty to charges of spying against the United States. Another, charged with espionage, defected to the Soviet Union. A Soviet employee of the United Nations pleaded "No Contest" to espionage charges — and several foreign diplomats have been detained and/or ousted because of their espionage activities.

William I. Ferrier, Corporate Director of Security, said that all of these cases clearly reflect the undeniable reality of the Soviet hostile intelligence threat to the United States. "It is real. It is severe. And it is near. And we would be very naive to assume that General Dynamics is not a high-priority target for this sort of activity."

"This is a threat that spans all types of intelligence operations — from traditional human espionage to the most sophisticated electronic devices," Ferrier said. "Every

kind of sensitive information is vulnerable, including classified government information, emerging technological breakthroughs and private financial transactions. Foreign intelligence services also sometimes target the political process, seeking both information and influence."

"As a major Department of Defense contractor, we are dedicated to complying with regulations and laws that protect America's security and safeguard her defense secrets," Ferrier said. "It is vital that we all be aware of Soviet Bloc intelligence operations."

During the next few months, General Dynamics World will publish a number of articles on the hostile intelligence threat to America. These articles are intended to help employees better understand the nature and scope of ongoing hostile intelligence efforts and the increased emphasis and vital importance of our security programs.

Example of DoD/Ethics/Personnel Hotlines Poster to be Displayed at All Company Locations

Camden's New Fire Brigade Helps Fight a Mock Disaster

Members of the newly organized volunteer Fire Brigade at Pomona's Camden Operations in Arkansas have participated in their first mock disaster, a simulated spill of hazardous material at the facility.

The event had been planned for several months in cooperation with Camden community agencies.

Participation in the disaster was beneficial to members of the Fire Brigade, according to Ann Towles, Camden Operations Safety Engineer.

"The knowledge and skills that were acquired through this exercise could not have been gained in a classroom

setting," she said.

The Fire Brigade was also given high marks by the Camden Fire Department for its professionalism in treating simulated victims and for containing the spill area.

The mock disaster began when Camden Operations notified the Ouachita County Hospital of the spill at the facility's shipping and receiving dock, with reports of 11 injured employees.

To provide realism to the exercise, a makeup artist from the Arkansas Fire Academy used his talents to simulate injuries.

Convair's Mission Planning System Tested Aboard Carrier Ranger

Convair for some time has been developing products for the future in the areas of mission planning, battle management and C3I (Command, Control, Communications and Intelligence). Last summer, the division was given the rare opportunity to try out a baseline mission planning system aboard the aircraft carrier USS *Ranger* when she deployed to the Western Pacific.

The system tested aboard *Ranger* is called Afloat Integrated Strike and Mission Planning (ISMP), a computer-based system that is being developed to meet the real-time planning requirements of a Navy battle group or battle force commander. ISMP integrates the Convair-built Tomahawk cruise missile with Navy aircraft to get the most effective strike power in coordinated missions.

During operation, ISMP displays map-like representations of terrain on a high-resolution color graphics terminal, with overlays showing targets and related threats. The system helps planners identify and select specific targets, determine which weapons will be effective against those targets, allocate the weapons to the targets and then develop missions with routes and timing. Once the planner is satisfied, the computer simulates the interactions between attacking and defending forces.

ISMP was first demonstrated to the commander-in-chief of the Pacific Fleet last April. At that time, Convair was invited to deploy the system on the next aircraft carrier going to sea so that Navy strike planners could evaluate ISMP in an operational environment. The scheduled departure of *Ranger* from San Diego gave the Convair/Data Systems Division-Western Center ISMP team the challenge of getting the system ready to go in only four months, about 25 percent of the time the task would normally take.

The team "went all out" to meet the departure date, according to Robert F. Anderson, ISMP Program Manager. "The event we planned for was basically a ship going to war, so a lot of data bases such as targets, terrain and defenses had to be loaded into the system," said Anderson. They had to assemble and test the hardware, keeping in mind they would be taking it into a harsh computer environment with no ready resupply capability. They also had to design, develop and test the nonexistent aircraft mission planning components of the system.

While most of the team volunteered to deploy with *Ranger*, only five were able to go. John Colberg, Senior Software Engineer from DSD-Western Center, was on board for the entire six weeks, along with team leader Richard A. Gregor. They and John A. Lee, another DSD-Western Center software engineer, left San Diego with the *Ranger* and spent the first part of the cruise installing and testing the equipment and software. Allan P. McKenzie and Douglas E. Miller, also software engineers from DSD-Western Center, joined the ship in Korea for the second half of the cruise.

"Thanks to the extraordinary effort of many Convair and DSD-Western Center people," Anderson said, "we were able to meet the departure date and the deployment objectives." Those objectives were to take off-the-shelf hardware into an operational environment and to demonstrate to the Navy what the system could do for it.

"The system allowed the planners on *Ranger* to play the 'what if' game," Colberg said. "What if" variations could be run for a mission in as little time as a minute. The computer processed and sorted vast amounts of data very rapidly, allowing human beings to do what they do best,



Carrier USS *Ranger* at Sea



Back on Shore. Convair's Integrated Strike and Mission Planning system is back in the laboratory after successful testing aboard the USS *Ranger*. In the center is the color graphics terminal showing terrain simulation and microcomputer portion of the hardware. ISMP team members (left to right) are ISMP Program Manager, and the four Data Systems Division-Western Center members who accompanied the ship, John Colberg, Allan P. McKenzie, Douglas E. Miller and

which is to make decisions.

With the exception of ISMP team leader Gregor, who served for 26 years in the Navy, none of the team had ever gone to sea before. Team members said that life in the "small floating city" environment of an aircraft carrier was cramped and noisy. They finally adjusted, they said, to the round-the-clock noise of aircraft landing and taking off from the flight deck above their sleeping quarters. When extended work kept them below decks, they did not see sunlight for days. They also experienced heavy seas in the wake of a typhoon near Korea, but, because of the carrier's size, there were virtually no adverse effects.

"Being aboard a carrier was a once-in-a-lifetime experience," Miller said. "We got to experience things that civilians never get to see," including a close-up look at



jelke

Whiteside

led by the Divisions

Material appointment, he was Director of Manufacturing Control. In 1983, he was appointed Director of Manufacturing for Camden Operations, later becoming Director of Manufacturing and Material Control there. Salyer holds a Master of Science degree in Systems Management from the University of Southern California.

Donald K. Bjelke has been named Division Vice President and General Counsel at the Pomona and Valley Systems divisions. He joined General Dynamics in 1961 as Associate Counsel for Convair and served as Assistant Vice President, International Operations Office. He

General Dynamics Space Team Recalls John Glenn's Flight in 1962

The General Dynamics team at Eastern Space and Missile Center at Cape Canaveral, Fla., joined in ceremonies Feb. 20th marking the 25th anniversary of John Glenn's flight into orbit. On Feb. 20, 1962, the *Friendship 7* spacecraft piloted by Glenn was powered into orbit by a General Dynamics-built Atlas booster.

The mission — Atlas/Mercury 109D — was the Free World's first attempt to put a manned spacecraft into orbit around the earth.

Of the 200 members of General Dynamics' original launch team, 140 are still at work at the Eastern Space and Missile Center.

One of them, Thomas J. O'Malley, now retired but formerly Test Conductor for 109D, recalled the drama of the liftoff and what he said to Glenn at that moment: "May the Lord be with you all the way!"

O'Malley and his wife, Anne, along with Lt. Col. Wayne K. Penley, Commander-Cape Canaveral Air Force Station, and James Womack, Acting Director of Expendable Vehicle Operations at Kennedy Space Center, joined the 109D launch team for the brief commemorative ceremony at the Project Mercury Monument at Complex 14. The monument honoring the original seven Mercury astronauts, four of whom rode Atlas rockets to earth orbit, was built by General Dynamics and is dedicated "to the thousands of men and women of the Free World who con-

tributed to the success of Project Mercury."

The first manned orbital flight was preceded by a series of six unmanned development flights. The Mercury program's Atlas booster was basically an Atlas D ICBM modified for manned space missions. By the time the Mercury program began, a significant amount of ground and flight testing of components and subsystems had been performed on the Atlas D. Special flight missions — in a configuration other than the basic weapon system design of the Atlas ICBM — had been flown, including the Atlas/Agena, Atlas/Able, Project Score and long-range ballistic flights of the Atlas vehicle itself.

But most importantly, the people of the then Astronautics Division team at the Cape had the common goal of getting the astronauts safely into orbit and safely back to earth.

Atlas went on to figure prominently in the United States space program for two more decades after Glenn's historic flight. Alone, or in partnership with the General Dynamics Centaur upper stage or other upper stages, Atlas has launched communications and weather satellites, scientific probes, planetary missions and defense and navigation satellites.

In May, another 25th anniversary will be observed: the first flight of Atlas/Centaur.



Thomas J. O'Malley, Test Conductor for Atlas/Mercury 109D (left), and Daniel J. Sarokon, Space Systems Manager of Base Operations at Eastern Space and Missile Center.

McSweeney Receives Management Group's Gold Knight Award

John E. McSweeney has received the Gold Knight of Management Award from the San Diego County Council chapters of the National Management Association for his efforts and achievements as Vice President and General Manager of Convair.

In presenting the award, Charles Rue, National Director of the NMA, said, "This is the highest award an area council can bestow on an individual. It is awarded to people in management whose leadership qualities are evidenced in the workplace and are also transferred into the community."

McSweeney, now serving as Vice President and General Manager of Valley Systems Division, was honored for his leadership of a company that provides major employment in the San Diego area and for his community involvement, including two assignments as Chairman of the San Diego Metro Area U.S. Savings Bond Campaign and his continuing support of the annual United Way/CHAD and March of Dimes programs.



Top Award. John E. McSweeney (left) receives the Gold Knight of Management Award from Charles Rue, National Director of the National Management Association.

Employees Earn Thanks For Record Tank Delivery

Land Systems recently distributed jackets to all employees as a special "thank you" for the monthly record delivery of Abrams tanks in October 1986.

The one-month delivery of 103 M1A1 tanks included 52 from the Lima Army Tank Plant and 51 from the Detroit Arsenal Tank Plant, monthly records for each plant and collectively for the program.

The silver-grey nylon shell jackets have a black and white trim around the waist and collar. On the left front of the jacket is an M1A1 logo with the numbers 103 and the October 1986 date.

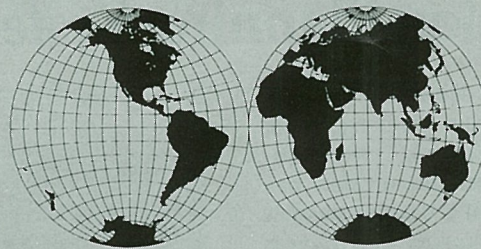
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Reyburn, Tom Rule, Joe Stout, Z. Joe Thornton



Around the World

CHQ: Andre R. Richir was appointed to Director International Offset-Turkey... Francis L. Asbury to Director International Offset-Korea... John W. Grimes to Managing Director-Greek Development Company... Winston C. Gifford joined as Corporate Director-Contributions... Larry D. Kimm as Senior Subcontract Auditor... Stephen J. Willis as Supervising Senior Subcontract Auditor... Donald A. Barr as Senior Supervising Auditor... Patrick D. Conley transferred from Fort Worth and was promoted to Senior Subcontract Auditor... Harry G. Davis transferred from Fort Worth and was promoted to Chief of Internal Audit... Gregory C. Gilmore transferred from Space Systems and was promoted to Corporate Manager-Space Transportation Program... David J. Pooler was promoted to Manager-International Offset-Procurement... Benjamin H. Schleider to Manager International Offset-Defense Projects... Peggy L. True to Government Contract Analyst.

Fort Worth: Charla K. Wise and Raymond E. Emerson were appointed to Director-F-16 Programs... Steven J. Andrews to Director-Estimating/Cost Analysis... Jan Blok to Director-Manufacturing... Charles Herndon to Engineering Director... Michael A. Addison and James T. Lawrence were promoted to Publications Administrative Services Supervisor... Lawrence W. Hughes to Administrative Services Supervisor... Richard L. Walters and Herbert R. Allison to Inspection Supervisor... Jerry P. Anderson, Edward W. Elders, Joseph G. Lewis, Leroy Nabers, Thoms R. Smoot and Charles T. Stewart to General Foreman... Edward R. Barfield to Manufacturing Technology Chief... William H. Barron to Subcontract Management Chief... Hobart M. Baxter and Michael D. Winters to Logistics Group Supervisor... Hampton M. Boatwright, Johnnie E. Hoats, James P. McNally, Neill M. Seaver and Edmund R. Whitton to Senior Field Service Engineer... Elisha K. Bourne to Senior Logistics Engineer... B. K. Bradfield to DoD Security & Investigations Manager... Jerry R. Brooks and Jerry G. Wood to Superintendent... Melissa L. Byers and Margie O. Yates to Project Coordinator... James B. Cawthorne to Logistics Engineer... Joe L. Coffey, Jeffrey S. Crane and George E. Cushing to Senior Quality Assurance Field Engineer... William M. Coffman Jr. to International Coproduction Chief... John W. Conway to Technical Illustrations Chief... Dayne A. Dasher, Charles D. Douglas, David P. Engstrom, Frederic B. Harmon, William K. Harrod, Jeff L. Howard, Raymond R. Ingleright, Bernard R. Kelleher and Eric T. White to Field Service Engineer... Grant L. Davis to Fabrication Manager... Cloyd J. Dowling Jr., Joe E. Hawkins, John K. Hogan and John V. Kotowski to Project Engineer... Curtis G. Ellison to Senior Manufacturing Engineer... Larry B. Ely to Investigations Supervisor... James R. Fenton and Randall G. Wagner to Industrial Engineering Supervisor... Pauline R. Finley to Manufacturing Engineering Specialist... Billy M. Fite to Product Management Specialist... Joseph D. Fowler to Financial Supervisor... Patrick O. Gallagher to Procurement Manager... John A. Harbolt and David A. McDonald to Principal Field Service Engineer... Carl Hice to Contract Proposal Estimator... Jackie J. Howard to Transportation General Foreman... Richard E. Kidd to Manufacturing Engineering Chief... Elton Koonsman to Purchasing Agent... Donald W. Lane to Senior Quality Control Field Engineer... Gregory J. Melven to Project Manager... Martin A. Monks to Electronics & Mechanics Project System Specialist... Joseph W. Moore to Senior Project Engineer... Forrest N. Moreland to Material Cost Supervisor... Henry Z. Neuman to Field Engineer... Isaac N. Polk Jr. to Program Administrator... Ira M. Swaim to Logistics Chief... W. T. Swanzy III to Tooling Supervisor... Michael D. Tilton to Coproduction Management Specialist... Charles W. Washam to Logistics Manager... Jack Weare to Quality Assurance Manager... Paul S. Wheeler Jr. to DoD Security Supervisor... Paul T. Woodard to Procurement Chief... Frederick Young to Quality Control Field Engineer.

Convair: George E. Copeland has been promoted to Program Manager... Patrick A. Smith to Plant Protection Lieutenant... Dennis P. Hyland and Lee A. Nixon to Group Engineer... Michael S. Kreyling to Plant Services Operations Supervisor... Frank D. Mealey to Transportation Operations Supervisor.

Electronics: Donna J. Berdux was promoted to Quality Assurance Engineer... Joane D. Chapman to Logistics Provision Specialist... Scott D. Oyler to Associate Engineer... Duane M. Harris to Senior Test Engineering Specialist... Rebecca L. Newsom to Marketing Representative... Kimberly M. Skrak to Materials Supervisor.

Space Systems: Fred J. Dietz was appointed to Finance Director... John G. Bodle to Engineering Director-Structures & Mechanical Systems... Edward H. Bock to Engineering Director-Systems Engineering... Robert E. Carlson and Ned L. Cross were promoted to Senior Engineering Specialist.

Electric Boat: Richard N. Surprenant was appointed to Quality Systems & Performance Director... Vangel Athanas was promoted to Human Resources Site Manager... Ronald W. Bashar to Reactor Services Site Manager... Joseph Botelho to Quonset Point General Foreman II... Alan A. Spadafora and Alan J. Caval to Site Superintendent... Harold L. Druery to Chief Engineer... Terry E. Coss to Nuclear Quality Control Engineering Supervisor... Scott A. Hurley to Educational Services Supervisor... Robert E. Keatley to Senior Planning Material Supervisor... Ronald Licciardi to Material Planning Supervisor... Bonita Martino to Travel Services Supervisor... Lawrence D. Patty to Engineering Manager... Edmund M. Ricci to Quonset Point Senior Packaging Administrator... Bruce Richmond and Joseph S. Schechter to Engineering Chief... James K. Robertson to Human Resources Site Chief... Stephen C. Siock and John L. Walkup to Engineering Supervisor... Alick Fortick to Foreman.

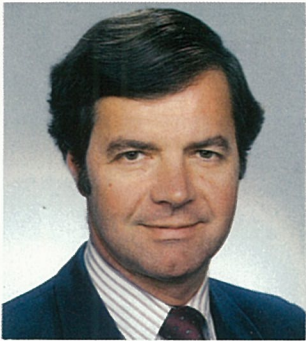
Pomona: John F. Chrivia was appointed to Systems & Administration Director.

Valley Systems: Richard M. Wright was appointed to International Market Development Director... John H. Beck, Leonard V. Lykins, Douglas J. McCroskey, John S. Ohm, Clyde W. Perry and Dean E. Riccioni were promoted to Quality Assurance Manager... Matthew S. Earle, Richard D. Ford, Beverly M. Machulies and Michael G. Greiner to Group Engineer... Lowell M. Johnson and Michael A. Toombs to Project Administrator... Benjamin A. Licera to Manufacturing Group Engineer... Ronald L. Miller to Estimating Chief... James M. Swetnam to Engineering Specialist.

Land Systems: Gary M. Cecchini was promoted to Marketing Representative... Jose A. Mangune to Group Engineer... Nora E. Iversen to Quality Assurance Engineering Specialist... Duane E. Wolford to Inspection General Foreman... Michael F. Fitzpatrick to General Foreman... James A. Simek to Material Planning & Control Supervisor... Mary Jo Reske to Material Planning Supervisor... Dennis M. Decovich to Program Management Chief... Richard E. Fryzel to Quality Assurance Engineer... Briggs J. Jones to Business Development Manager... Ronald A. Ford to Program Management Chief... Timothy M. Dodge to Program Administrator... Ruth Hurlock to Accounting Chief... Harold R. Hopkins II to Senior Engineer... William P. Rampe to General Foreman... Edmund W. Matkowski to Engineering Supervisor.

Data Systems: At Western Center, Milan D. Thompson was promoted to Data Systems Senior Engineer. At Central Center, Gerald A. Holzer was promoted to Property and Material Manager.

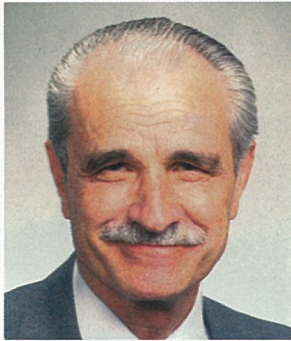
GDSC: L. Peter Larson transferred from Convair Division and was appointed to Controller and Director of Administration... Henry R. Domec was appointed to Technical Support Director... Frank B. McKenzie was promoted to Project Manager... Karl W. Meek to Finance Supervisor... Brent A. Brewer to Procurement/Subcontracts Supervisor... Robin E. Reed to Contracts Representative.



Bennett



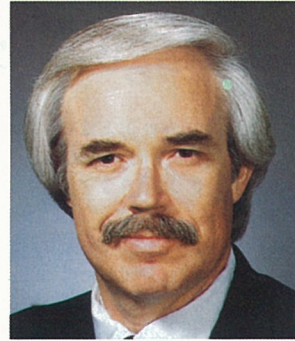
Moore



Thomas



Petrushka



Park



Scheible

Promotions to Vice President Are Announced Throughout the Company

Promotions to Vice President have been announced by the Space Systems, Fort Worth and Valley Systems divisions.

LeRoy E. Bennett was named Division Vice President of Material at Space Systems. He joined Quincy Shipbuilding in 1966 and had increasing responsibilities in the Procurement and Material departments. In 1981, he was appointed Director of Material for Quincy and, in 1985, transferred to Space Systems as Director of Material. Bennett earned a Bachelor of Science degree in Marine Engineering from the Maine Maritime Academy in 1962. He is a captain in the United States Naval Reserve.

Don E. Moore was appointed Division Vice President of Quality Assurance at Space Systems. He joined Space Systems in 1985 as Director of Quality Assurance after a career in government. He had most recently been Deputy Executive Director for Quality Assurance for the U.S. Defense Logistics Agency. Moore received a Bachelor of Science degree in Mechanical Engineering from the University of Pittsburgh in 1948 and a master's degree in business administration from California Western University in 1963.

Russell H. Thomas was named Space Systems Division

Vice President and Program Director for Titan/Centaur. He joined the company in 1956 as a test engineer, holding positions of increasing responsibility in Research and Engineering and Program Management for launch vehicle product lines. In 1985, he was appointed Program Director for Titan/Centaur at Space Systems, with responsibilities for development, production and launch operations of Centaur for the Titan IV booster system. Thomas earned a Bachelor of Science Degree in Mechanical Engineering from the Georgia Institute of Technology in 1952.

Edward M. Petrushka has been promoted to Division Vice President-Research and Engineering at Fort Worth. He has been with General Dynamics for nine years, serving the last five as Director of Fort Worth's Structures and Design Department. He also served as Chief Project Engineer for Navy Programs and Chief Engineer for the FB-111B/C Strategic Bomber proposal. Before joining General Dynamics, Petrushka was employed with North American Aviation (now Rockwell) in Ohio for 22 years, serving as Project Engineer on advanced aircraft concepts, head of the Fuselage Design Group, Manager of the Augmentor Development Group and Engineering Project Manager. He holds a Bachelor of Science degree in

Mechanical Engineering from Case Institute of Technology and did graduate work in aeronautical engineering and math at Ohio State University.

James G. Park has been appointed Division Vice President-Product Assurance at Valley Systems. He began his career with General Dynamics at Pomona in 1967 as a chemical analyst. He advanced through several positions in the Quality Assurance Department and was named Manager of Process Quality Assurance and Corrective Action in 1980. He became Manager of Program Quality Assurance in 1984. Since October 1985, Park has served as the division's Director of Product Assurance, with responsibility for total product assurance activities.

John F. Scheible has been promoted to Division Vice President-Material Acquisition at Valley Systems. He joined General Dynamics at Pomona in 1966 as a buyer in the Procurement Department and advanced to Procurement Administrator and Purchasing Agent before being named Manager of General Procurement in 1981. Scheible has served as Director of Material Acquisition for Valley Systems since October 1985, being responsible for all material acquisition, including major subcontract and international procurements.



Frazier



Sotir



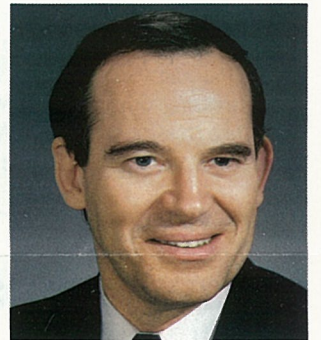
Donohue



Salyer



Bjelke



Whiteside

More Promotions to Vice President Are Announced by the Divisions

Promotions to Vice President also have been announced by the Electronics, Electric Boat, Land Systems, Pomona and Valley Systems divisions.

Mark E. Frazier has been appointed Division Vice President-Quality Assurance at the Electronics Division. He began his career with General Dynamics in 1979 as Chief of Procurement Quality Assurance at Fort Worth. In 1983, he transferred to Convair as Assistant Director-Procurement Quality Assurance. He was appointed Director of Quality Assurance at Electronics in 1986. Frazier received a Bachelor of Science degree in Electrical Engineering from the University of Texas at Arlington in 1969.

Thomas A. Sotir, Director of Industrial Relations at Electric Boat for the past eight years, has been promoted to the newly created position of Division Vice President-Human Resources and will oversee Human Resource activities at all division locations. He joined Electric Boat in December 1977 as Manager of Labor Relations and was appointed Director of Industrial Relations in November 1978. Prior to joining the division, Sotir spent 19 years with General Electric in manufacturing and employee relations positions. He holds a bachelor's degree in indus-

trial engineering from Northeastern University and a Master of Business Administration degree from Xavier University of Ohio.

Thomas P. Donohue was named Land Systems Vice President and General Counsel. The promotion resulted from the elevation of the position of General Counsel, previously held by Donohue, to Vice President and General Counsel. Donohue joined the Industrial Relations staff of Chrysler Corporation in 1959. In 1961, he transferred to the General Counsel's Office of Chrysler, where his last position was Senior Attorney. In 1980, he established a private practice law firm with two other attorneys. In January 1982, he rejoined Chrysler at its defense subsidiary and was subsequently named General Counsel of Land Systems. Donohue received bachelor of arts, bachelor of laws and master of business administration degrees from the University of Detroit.

Robert D. Salyer, former Director of Material Function at Pomona, has been promoted to Division Vice President-Material. Salyer has been with General Dynamics since 1975 and has managed programs associated with the Phalanx and Sparrow weapon systems. Prior to his

Material appointment, he was Director of Manufacturing Control. In 1983, he was appointed Director of Manufacturing for Camden Operations, later becoming Director of Manufacturing and Material Control there. Salyer holds a Master of Science degree in Systems Management from the University of Southern California.

Donald K. Bjelke has been named Division Vice President and General Counsel at the Pomona and Valley Systems divisions. He joined General Dynamics in 1961 as Associate Counsel for Convair and served as Assistant to the Vice President, Legal, at the Corporate Office. He was transferred to Pomona in 1963 as Associate Counsel and was appointed Division Counsel in 1966. He was promoted to his most current position as General Counsel for Pomona in 1977.

John H. Whiteside has been promoted to Division Vice President of Human Resources at Pomona. He joined the division in 1980 as Manager of Labor Relations and Employment after 18 years in industrial relations positions with other companies. In 1982, he was named Manager of Labor Relations and Hourly Personnel. In 1986, he was promoted to Director of Industrial Relations.

Valley Systems Honors Seven Employees for Performance Excellence

Seven Valley Systems Division employees have received Eagle Awards for demonstrating exceptional performance in their work.

They are: Ron Kapper and Ray Legner, Excellence in Design-to-Production Transition; Al Cimino, Excellence in Material Acquisition; Ron Abbott, Excellence in Engineering; Clyde Perry, Excellence in Quality; Craig Johnson, Excellence in Program Management; and Dick Rody, Excellence in Test Equipment Development.

The presentations were made at the National Management Club meeting by Larry McMillan, Valley Systems Vice President-Human Resources.

The dual Excellence in Design-to-Production Transition award to Kapper and Legner was given for their efforts in

transitioning Stinger-POST into production.

Kapper, a senior project engineer in the Stinger Program Office, has led the multidisciplinary Stinger-POST proofing team. The team's job was to ensure that the first units were built on-schedule, with high quality.

Legner, a design specialist in design engineering, was also instrumental in transitioning Stinger-POST from the design phase into production.

Cimino, Manager of Material Control, was cited for "totally embracing the production functions as they pertain to the cost/schedule control system."

Abbott, Engineering Specialist, was recognized "for conspicuous and outstanding achievement in the area of advanced program development." During the past two

years, he has managed the development of the division's prospective infrared terminally guided submunition product.

Clyde Perry, Chief of Inspection, was honored for his "dedication and experience (that) have been invaluable in maintaining the excellent quality posture enjoyed at the Valley Systems Division."

Craig Johnson, Senior Project Engineer and Deputy Director of Advanced Programs, was recognized for management skills in helping to establish "a new product line for the division."

Dick Rody, Engineering Staff Specialist, was cited for "his technical expertise in all facets of test equipment development."

First F-16C Fuselage Sections Joined at TUSAS Factory in Turkey

The forward, center and aft fuselage sections of the first F-16C to be manufactured in Turkey recently were joined together, or mated, in a ceremony at the TUSAS Aerospace Industries (TAI) factory in Murat.

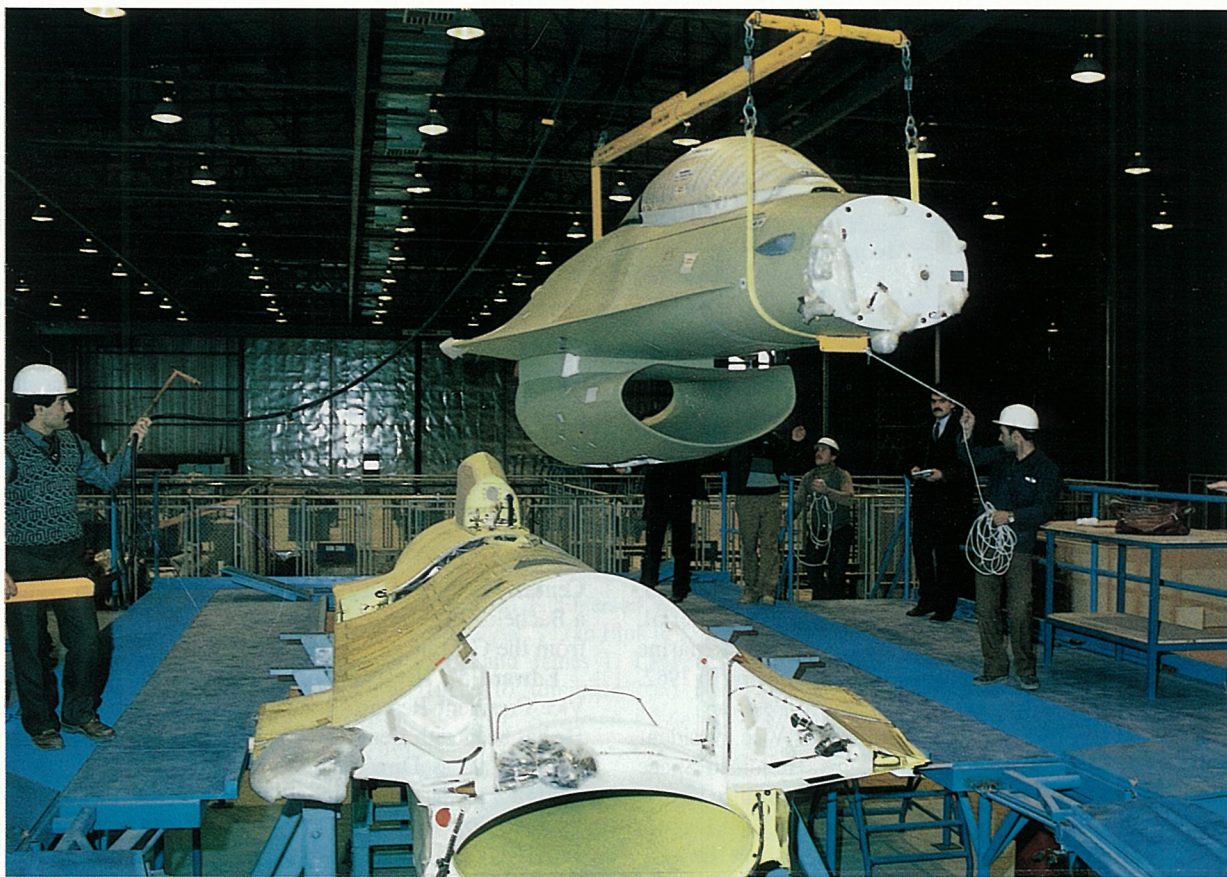
Jerry R. Jones, General Manager and Deputy Chairman of TAI, told the company's employees, members of its Board of Directors, General Dynamics Resident Office employees and representatives of the press who attended the ceremony that TAI had met its first major milestone by beginning F-16 mating according to schedule.

"Today we are witnessing an historical event," he said. "This is a development of historical significance as far as the aircraft industry of Turkey is concerned, and it is a proud moment for the American and Turkish shareholders, as well as employees of TAI and General Dynamics." TAI was established less than three years ago as a joint venture in Turkey. Fifty-one percent of the company is Turkish-owned, and 49 percent is American-owned. The joint venture calls for General Dynamics to manage the company during its first seven years of operation. The Turkish investment includes the land and buildings, while General Dynamics is providing equipment and services.

In addition to Jones, who is also Fort Worth Vice President-Turkey Joint Venture, the other General Dynamics personnel on TAI's staff are the firm's Director of Operations, its Director of Finance, Contracts and Estimating and its Director of Quality Assurance. Each of these positions has a Turkish deputy who will assume the full responsibility of the post in 1991. All other positions in TAI are held by Turkish nationals.

General Dynamics agreed to establish the joint venture, which will develop a modern aircraft industry in Turkey, as part of the country's purchase of 160 F-16 aircraft. Under a coproduction contract, TAI will assemble 152 F-16C/D Fighting Falcons and deliver them to the Turkish Air Force. Eight aircraft will be built at Fort Worth.

The coproduction agreement also specifies that 112 aft fuselages, 100 center fuselages and 88 sets of wings will be fabricated and assembled by TAI, said Jones. "This work is progressing on plan. The work has been scheduled to allow progressive start-up. TAI has allowed time to familiarize its work force with one type of work before begin-



First TUSAS-Assembled F-16. Employees at the TUSAS Aerospace Industries factory in Murat, Turkey, watch as the forward fuselage section of the first F-16 to be assembled in Turkey is lowered into a fixture for mating with the center and aft fuselage sections.

ning the next type," he said.

TAI currently has about 570 employees on its payroll, including 170 who have been sent to Fort Worth for several months of training. By 1989, more than 300 Turkish employees will have been trained at Fort Worth, and more than 300 additional workers will have been trained at TAI, Jones said. "The training program is on schedule also," he added.

"Overall, TAI feels that the combination of American

and Turkish management has worked very successfully, allowing the company to meet schedules and stay within cost," Jones said. "TAI sees no major difficulties in meeting its objective, which is to develop the capability to produce high technology aircraft in Turkey."

Construction of the TAI factory is approximately 80 percent complete. The first F-16 to be delivered from the factory is scheduled to make its initial flight next October.

Convair, Space Systems Select Winners of General Manager's Award

Convair and Space Systems employees who made outstanding contributions to the company's drive for administrative excellence in 1986 have been recipients of the General Manager's Award, the highest recognition the divisions make during the year.

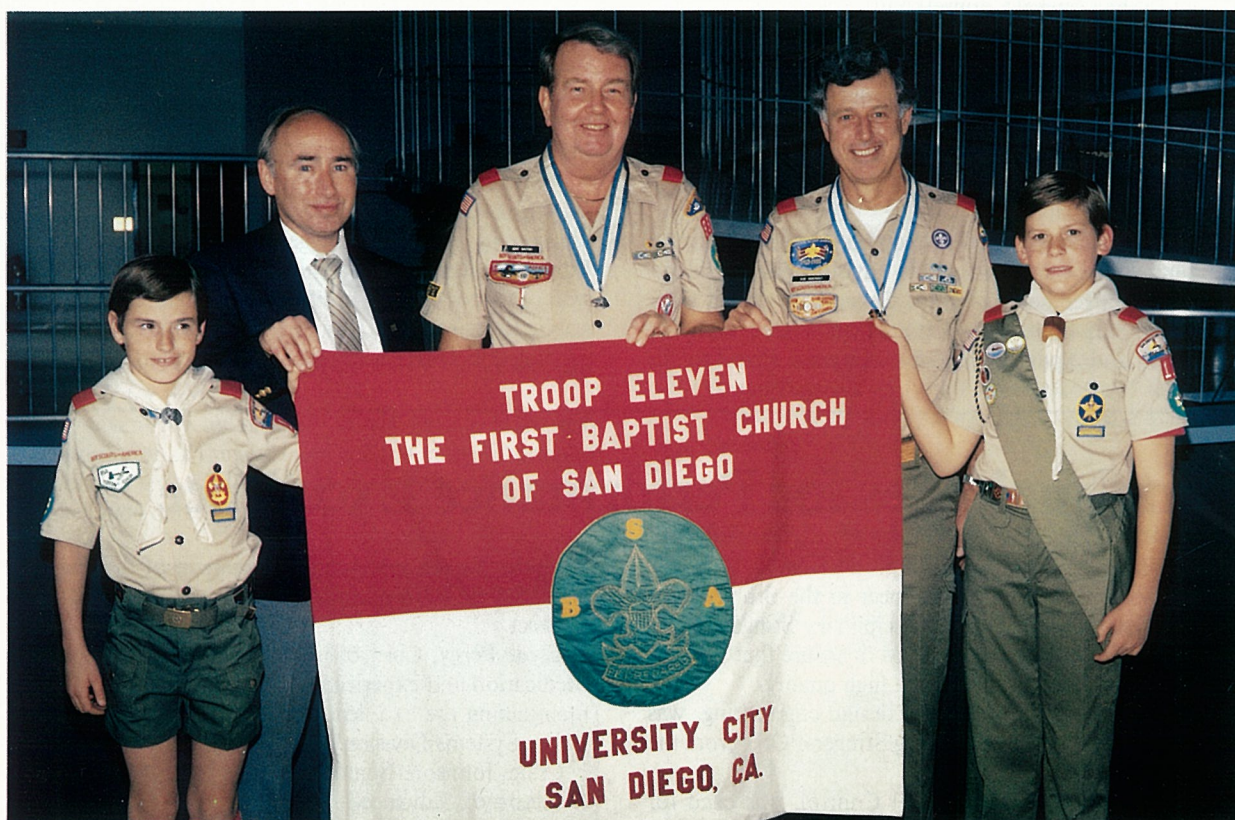
Picked as dual winners at Convair were Mary A. Klement, Chief of Logistic Engineering, and T. Glenn Yuguchi, Manager of New Business Administration.

Klement was responsible for managing the development of the materials and course content for the new business funds training package that was used corporatewide. She

also led a proposal called RAMCAD (Reliability and Maintainability Computer-Aided Design) that puts Convair at the forefront in logistic technology. The proposal integrates supportability software into a CAD workstation and engineering analysis program.

Yuguchi played a significant role in developing a set of corporate policies and training procedures on the management of new business funds. He served on the first corporate Policy and Procedures working group and with other related groups to resolve important issues related to the improvement of company administrative practices.

Space Systems selected Senior Estimating Specialist Elaine M. Kramer to receive its General Manager's Award for her work with the new Cost Pricing System. Kramer initially was the Convair representative on the corporate team that began developing the system and was the driving force within the division for its implementation and successful use. When Space Systems was formed, she developed a new Estimating Support function for the division and in 1986 supported the pricing of two major proposals simultaneously.



Convair and Space Systems Salute Boy Scout Week. Jonathan Forrest and his father, Donald Forrest of Space Systems, Hubert C. Watton, C. Robert Niderost of Convair and Tiger Rowan (left to right) display the first of five different troop flags that flew alongside the American flag at the Kearny Mesa plant in San Diego during Boy Scout Week. The adult leaders in the photo represent the more than 200 General Dynamics people involved in scouting in the San Diego area.

Seven Outstanding Pomona Employees Selected for Awards

Seven Pomona employees have been named recipients of the Pomona Excellence awards for outstanding performance in their work.

They are:

G. Robert Barr, Manager of Independent Research and Development and New Business Funds in Advanced Technology and New Programs Directorate: Excellence in Administration.

Thomas W. Bastian, Engineering Specialist, Advanced Air-to-Air Missile (AAAM) Program Office: Excellence in Engineering.

Vincent S. Borsattino, Manager, Scheduling & Services, Facilities Management/Plant Engineering: Excellence in Management.

Rita Farley, Senior Accounting Specialist in Financial Accounting: Excellence in Accounting.

Cleveland Holifield, Manager, Quality Improvement Program in Product Assurance: Excellence in Production/Quality Improvement Program.

George Runyan, Manager of Printed Wiring Board & Flex Harness Manufacturing: Excellence in Production.

Spencer J. Speer, Quality Assurance Project Administrator in the Quality Assurance Section of Production Assurance: Excellence in Quality.

Ethics Trainers at Space Systems Get Division's 'Thank You' By Julie C. Andrews

Space Systems Division management recently gave a well-deserved "thank you" to the 33 employees who were responsible for leading ethics workshops for the division.

The designated trainers came from all areas of Space Systems. Some had training experience and others had none. They prepared to become ethics trainers through a concentrated two-and-a-half day seminar before going on to lead the four-hour ethics workshops throughout their own departments.

At a recognition breakfast in December, Dr. Alan Lovelace, Vice President and Space Systems General Manager, expressed his appreciation to the group. "When Chairman Pace first kicked off the Ethics program," Lovelace said, "he referred to it not as 'my' program, but as 'our' program."

"The kind of ownership you have demonstrated," Lovelace said, "was the most important part in carrying out the ethics training requirement in both letter and spirit."

Roberta Baade, Manager of Training and Development, added her department's thanks for helping the division reach its goal of 100 percent of employees trained in ethics by year-end. Trainers faced some adversities. Close to the time ethics classes were scheduled to begin in the Space Systems Training Center, the division received word that the Shuttle/Centaur program had been cancelled. The Training Center became the Outplacement Center to help employees affected by the reduction in force find new jobs, and ethics facilitators had to find and schedule their own workshop classrooms.

"Our people met their responsibilities in the middle of some difficult times," said Baade. "We couldn't have done it without them."

Several of the Space Systems designated trainers shared their thoughts on the effectiveness of the workshops, what it was like to be an ethics facilitator and the program's effect on their departments.

Thomas M. Georgi, Senior Management Information Specialist, taught workshops for Facilities and Planning. "Participation levels were very high," said Georgi. "People are thinking before they act now that they have been exposed to the formula for evaluating an ethical problem," he said.

Space Systems gave each employee a laminated, wallet-sized card with the six-step ethics model and hotline number. The card was useful, said Georgi, for a group of employees who decided to call their ethics hotline when an offsite supplier wanted to present them with gift items.

"Previously, there might not have been that level of awareness or anyone to ask," said Georgi.

Gary R. Rankin, Chief-Material Estimating, taught two workshops with coworker Lisa Jacobs. "The most rewarding part of being a trainer was seeing the people come alive

with enthusiasm when we started discussing ethical dilemmas in our groups," said Rankin. Since the workshops, he said, it has been easier to apply ethics guidelines to hard questions about policies. Rankin also observed that people are not only applying the ethics formula to work problems, but they are also measuring situations outside the workplace against the General Dynamics code of ethics.

Engineers in the workshops conducted by Robert D. Bradshaw, Manager-Systems Analysis, discussed potential conflicts between what may be right from an organizational or an engineering standpoint and potential conflicts over concern for the customer or company self-interest. "The workshops got people to think of the right approach

four hours. Crooks thought the workshop materials prepared by the Training Department were excellent. "Our Training Department did everything it could to make our job easier," she said.

At the same time G. Edward Herring was taking a class in Organizational Behavior, he became an ethics facilitator. "My teacher used me as a sounding board during the portion on business ethics," said Herring, "knowing I was involved with our program at work." Procurement-related issues were common in his workshops, said Herring, a Logistics Specialist. Now that people have ethics training, they know how to recognize problems and what issues to review with a supervisor, he said. "I go to my boss now



Thanks for a Job Well Done. Ethics Facilitators at Space Systems pose for a group photo after receiving a well-deserved word of thanks from the division. Also shown are Richard L. Neal, Ethics Program Director (sixth from left); Bernie A. Kulchin, Vice President-Human Resources (seventh from left), and Dr. Alan M. Lovelace, Vice President and Space Systems General Manager (far right).

to an ethical problem. People who think this way are not going to go out and make a bad decision," said Bradshaw. An example of post-workshop awareness, he said, was a call he got one morning from an employee who was late to work because of a water main break near the Lindbergh Field plant. The employee had a question on how to fill out the time card properly. "Several years ago," said Bradshaw, "an employee may not have thought it necessary to check."

"The most interesting part of being a facilitator," said Patricia J. Crooks, Financial Supervisor in Material Forecasting, "was listening to what everyone had to say about his or her ethical dilemmas." The enthusiastic discussions, she said, made it hard to limit the sessions to the scheduled

with a dilemma that I might not have in the past."

Charles R. Goforth, a general supervisor in Engineering Test Support, taught more than 100 engineering and support personnel in his ethics workshops. As a facilitator, he said, he felt somewhat like a flak-catcher at the beginning of each session, "but that went away when people got involved and started to participate." Goforth, who has a degree in education, said, "One thing I learned throughout the preparation to teach and actual teaching is that you don't teach people. People teach themselves. The people made these seminars." Since the workshops, awareness has increased, he said, especially on time cards. "People are asking good, solid questions that would not have been asked before."

Health Matters Become Popular Reading in Fort Worth Cafeteria

Fort Worth employees now have something new and interesting to read while dining in the plant cafeteria.

It is fat, calories and sodium, listed in numbers as they exist in the foods the employees are consuming. The data is being made available as part of Nutrition For Thought, a cooperative program of the division's Health and Fitness Committee and Coburn's, an outside firm that has the plant's food service contract.

The Health and Fitness Committee is composed of employee volunteers, representatives of the employee recreation association staff and Charles E. Moore, the chairman, from the Human Resources Department. SANUS, a health maintenance organization, is also helping sponsor Nutrition For Thought.

In addition to listing the nutritional content of foods, the program goes a step farther by offering a Fitness For Life menu, composed of foods low in calories, fats and sodium that conform with American Heart Association guidelines, as an alternative among cafeteria selections each day. A part-time dietitian has also been hired by the cafeteria to help plan menus and advise the cooks on ways to reduce calories, saturated fats, cholesterol and sodium in foods without affecting their flavors.

Several restaurant chains have been heralded recently for offering similar nutritional information, but Fort Worth may have the first cafeteria in industry to offer such a program, said Mark Watkins, Health and Fitness Coordinator for the recreation association.

"We started the program as an educational measure, really," Watkins said. "As a health committee, we wanted our employees to be aware of the nutritional values of the foods they eat. It seemed that the easiest way to achieve that would be to start here at the plant. As employees see the nutritional values posted daily, we hope they'll become more aware of nutrition and apply this knowledge to the foods they prepare and eat at home, too."

Jerrell Coburn, General Manager of the cafeteria, said no major changes in the regular menu have been made because of the program, except for offering the "fitness" selection. "Some of the food analysis results indicated things that we didn't expect, though," Coburn said.

"We found that our spaghetti and meat balls is a very healthful meal, although you usually think of it as fattening. And we found that our hamburgers are healthful, because we flame broil and use lean meat. But, at the same time, we found that some of our foods had more sodium content than we'd expected, so we've taken some steps to change that."

Coburn said the cafeteria normally serves about 1,500 lunches a day. "I don't know exactly how many people are choosing foods from the 'fitness' menu, but the foods seem fairly popular," he said.

Ai-Lan Le, a registered dietitian, works with Coburn's cooks as a consultant two mornings a week, experimenting with new recipes. For example, she might prepare three single servings of fish in three different ways, but each in accordance with American Heart Association guidelines. "From the three, we'd take the recipe that tastes best, and put it on the Fitness For Life menu," Le explained.

Watkins, who is an exercise physiologist, said the Nutrition For Thought program is not intended to discourage people from eating any particular foods. "We don't believe you should rule out any foods, but certain foods should probably be eaten in moderation," he said.



Nutrition For Thought. Fort Worth employees Debbie Stratton (left) and Sharon Lovelady sit down to a healthful meal in the plant cafeteria. The yellow card on the table, in background, lists the nutritional contents of foods served in the cafeteria.

Dutch Firm Buys 10 Cessna Caravan IIs in Largest Fleet Sale of the Type

Aviation Lease Holland B.V. has purchased 10 Caravan II twin-engine turboprops from Cessna Aircraft Company. The Dutch leasing company also signed an option for six additional aircraft.

The contract represents the largest fleet sale of twin-engine turboprop aircraft ever recorded by Cessna.

Martin Duijvestijn, Managing Director of Aviation Lease Holland, based at Teuge Airport, said rapid expan-

sion of the airfreight business in Europe led to his company's purchase of the Caravan IIs.

Duijvestijn said his company will lease the aircraft, with or without crew and maintenance service, to operators in any European country. The airplanes will be maintained by Aviation Technics at Teuge Airport.

Another of Duijvestijn's companies, Air Finance Holland, last year took delivery of two Caravan IIs which also

are being used in cargo operations. Duijvestijn said the excellent dispatch record of these aircraft was a major factor in his decision to purchase the additional Caravan IIs.

Brian Barents, Cessna's Senior Vice President of Marketing, said deliveries of the aircraft to Aviation Lease Holland began in March at a rate of one per month. "We are extremely pleased to announce this major fleet sale," Barents said. "It will significantly increase the momentum of the Caravan II program in Europe and worldwide."

Barents said the Caravan II is the only aircraft of its type in production. "Its useful load of 4,402 pounds is almost 1,000 pounds greater than the nearest competitor's," he said, "and its cabin volume is 10 percent larger than that of the competition."

The Caravan II is assembled by Reims Aviation, S.A., Cessna's associate company in Reims, France. The aircraft received its French certification in December 1984 and earned its FAA certification last year.

In addition to the two aircraft owned by Air Finance Holland, two Caravan IIs are in service with the French Customs Service and two have been delivered to the French Army.

The Caravan II can be configured with up to 12 commuter passenger seats, or as an eight-passenger executive aircraft, in addition to the cargo version. It is powered by Pratt & Whitney PT6A-112 engines rated at 500 shaft horsepower and has a maximum cruise speed of 246 knots (283 mph). The price of the standard equipped Caravan II is \$1,125,000.



Dutch Leasing Firm Has Bought 10 Caravan IIs and Has an Option for Six More

Company Will Honor Outstanding College Reserve Officer Candidates

More than 200 outstanding young men and women in college-level Reserve Officers Training Corps detachments throughout the nation will be honored this spring with the General Dynamics Award of Merit, presented annually to one student in each ROTC detachment.

General Dynamics has been providing the awards for presentation by the commanders of Air Force ROTC and Navy ROTC units for more than 40 years. The program recently was expanded to include awards for outstanding officer candidates in about 60 schools which sponsor Naval Enlisted Commissioning Personnel and Marine Enlisted Commissioning Education Programs.

Presentation of the awards has become an important part of the Awards Nights and other year-end ceremonies held by many of the college detachments. Each of the designated Air Force ROTC cadets receives an F-16 model and a certificate, and honorees in the Navy ROTC units receive an engraved plaque.

General Dynamics sends the awards to ROTC commanders early in the year. Many of the detachments display the awards in their headquarters until the time of presentation, to serve as an extra incentive to cadets and midshipmen.

Recipients of the awards are selected by their commanders on the basis of military and academic excellence and leadership ability, said Robert A. Morris, Corporate

Vice President-Communications, who administers the ROTC awards program.

At least one former recipient has gone on to become an



Company Award. Cadet Julie A. Ringwald (right), of Air Force ROTC Detachment 665 at the University of Cincinnati, receives the General Dynamics Award of Merit and F-16 model from Capt. Nancy J. Murphy, Assistant Professor of Aerospace Studies at the university.

employee of General Dynamics. David J. Wheaton, Fort Worth Vice President-Marketing, received a company-sponsored Award of Merit in 1962 while he was in the Navy ROTC at the University of Colorado. He later served as a fighter pilot in the Navy.

General Dynamics has received many letters of appreciation for providing the awards. For example, in 1986, Capt. Dean S. Allred, Commandant of Cadets for the University of California at Los Angeles' Air Force ROTC program, wrote, "Your support of our activities is a crucial element of our program. The recognition that your organization provides to our cadets for their year-long efforts forms the impetus for them to try even harder in the future."

"One of the principal driving forces behind (students') enthusiastic efforts is the recognition bestowed upon them by organizations such as yours. Without this support, many deserving young men and women . . . would not be appropriately recognized for their individual performance," wrote Marine Corps Col. J.A. Schumacher, Chairman of the Naval Science Department and Commander of the Navy ROTC at Marquette University.

"Your award is much sought after by our cadets each year. Thank you for supporting our training program," wrote Capt. Dean C. Loucel, Commandant of Cadets for Air Force ROTC Detachment 510 at the University of New Mexico.

Longtime Carousel Enthusiast Kenneth Bruce Has a Way with Horses

As a result of Kenneth L. Bruce's particular interest and talent, he and his two-year-old daughter Erin have ridden just about every carousel in California.

Bruce, a Space Systems employee, said the rides — in places like Golden Gate Park in San Francisco and Seaport Village in San Diego — may have given Erin a wrong impression. "She's growing up thinking all fathers are like hers," Bruce said.

Bruce's interest in carousels centers on the carving of the wood animals that give his daughter and children of all ages such delight. This craft flourished in the United States around the turn of the century before fiberglass, cast iron and mass production methods made handcarved animals too costly and obsolete. Some of the wood figures from that era command high prices now as antiques, especially those by master carvers such as Gustaf Dentzel, Charles Loeff and Herschell Spillman, said Bruce. "People generally don't realize what talent and skill went into creating the animals," he said. Although there are many people who restore antique animals, Bruce is among a small group of no more than a half dozen people in California who carve them.

One of his creations, a gleaming white American flag horse, is styled after one built by the famous Spillman Engineering Corp. in 1910. The flag horse was a fixture on carousels, according to Bruce, commanding a prominent outside position on the revolving platform.

"I added my own touches to the original design," said Bruce, who sketched the horse from a photograph. "The original had a limp horsehair tail. I decided to carve a tail

as part of the figure, and it adds more life to the horse."

After sketching and cutting the design templates, Bruce uses stack laminate in hardwoods such as poplar, alder and cherry. He bandsaws the silhouette and then begins carving all the muscle definition, face and hair.

"The way I finish the piece is what really distinguishes my work from other carvers," Bruce said. "I use 30 to 50 coats of automotive acrylic lacquer with wet sanding between each coat. It makes for a very high gloss finish that is also very durable. I'm sure my animals will last for 200 years."

Bruce's pieces are definitely intended to be cherished as collector's items and heirlooms and will see no duty on actual carousels. He estimates that the flag horse took about 400 hours to make, with up to a third of that time spent in applying the finish. The flag horse is now on display at a gallery in Del Mar, Calif.

Bruce, a Test and Engineering Materials Representative, has been involved with art since an early age. He apprenticed himself to an antique refinisher who taught him the craft of working with wood and who encouraged a perfectionist attitude.

The arrival of a baby daughter inspired him to do his first horse — a miniature rocking horse, also based on an antique design.

He currently is working on a zebra and includes among his future projects a bucking bronco, tiger and seahorse. He plans to insert a small time capsule into the hollow body of the zebra, containing information about himself and the events of 1987.



Kenneth Bruce Gives a Last-Minute Polish to His Carousel Horse Before Sending It to a Gallery

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Lincoln



Brooks

Lincoln Is Named Freeman's Chairman; Brooks Is President

Lucian A. Lincoln, President and Chief Executive Officer of Freeman United Coal Mining Company, has been appointed Chairman. He will continue as Chief Executive Officer.

Succeeding him as President is Richard J. Brooks, formerly Executive Vice President, who also was appointed Chief Operating Officer.

The new management structure will enable Lincoln to devote more time to long-range business planning and strategies, the company said.

Lincoln has been President and Chief Executive Officer of Freeman United since 1973. He has been associated with the Resources Group of General Dynamics for more than 30 years. He also serves as a Vice President of Material Service Corporation.

Lincoln has a law degree from DePaul University.

Brooks joined Freeman United in 1976 as Senior Vice President of Sales and Marketing. He was appointed Executive Vice President in 1985.

Before joining Freeman United, Brooks was Vice President, Sales of Westmoreland Resources, and earlier served as Midwestern Division Sales Manager for Consolidation Coal Co.

Brooks earned a bachelor's degree in mathematics from Hiram (Ohio) College. He is Chairman of the Mississippi Valley Coal Exporters Council.

Agreement Is Signed For Commercial Use Of Atlas/Centaur

The National Aeronautics and Space Administration (NASA) has signed an historic agreement with the Space Systems Division that transfers commercial operations of the Atlas/Centaur launch vehicle to the company. The agreement, the first of its kind with the private sector, permits the company to use Atlas/Centaur tooling and production facilities at Space Systems in San Diego and Atlas and Centaur launch facilities at Cape Canaveral, Fla., to provide complete checkout and launching services for commercial Atlas/Centaur customers.

"The formal agreement with NASA is the final ingredient we need to be able to go forward with a full package to our potential commercial customers," said Dr. Alan M. Lovelace, Vice President and General Manager of Space Systems Division. "It is the culmination of a three-year effort, since the government first announced its intention in 1983 to commercialize the expendable launch vehicle program."

General Dynamics has been launching Atlas/Centaur under NASA contracts for 24 years, while production of the vehicles continued for 26 years. Lovelace pointed out that the use of the vehicle integration, checkout and launching facilities at Cape Canaveral enables the company to maintain the same skilled work force which has been responsible for the success record that Atlas and Centaur enjoy today.

One Atlas/Centaur vehicle remains to be launched under NASA contract in 1987.

Company Seeks to Improve Competitiveness; Measures to Be Implemented Corporatewide

General Dynamics' top managers met for two days in St. Louis last month to discuss corporatewide implementation of measures to improve the company's competitiveness.

The importance of this objective was announced as the keystone of the 1986 General Dynamics Annual Report, in which Chairman and Chief Executive Officer Stanley C. Pace wrote that "in an environment pervaded by a growing emphasis on competition and cost-consciousness . . . we must achieve excellence in cost-effectiveness and cost-competitiveness."

The managers who met in St. Louis were asked to address competitiveness in at least four categories, including cost reduction, cash generation, capital management and business development.

"The recent changes in the acquisition plans and resulting contract awards by the Department of Defense make it clear that cost, not the technical performance, now is the most important criterion," said President Oliver C. Boileau. "And given the pressures on the federal budget, spending for defense is not going to grow at the rates of the last five years. As a result, defense contractors must

achieve competitiveness through cost reduction."

Several economists, speaking at the meeting, predicted that the annual inflation rate will be about two percent for the next five to ten years. Accordingly, they believe that any manufacturer who wants to remain competitive must hold cost growth to less than two percent a year.

Mechanisms are being put in place to continue an exchange of ideas and a review of approaches to competitiveness among managers in all operations of the company.

The question of competitiveness was addressed in the recently released Report of the Presidential Commission on Industrial Competitiveness. The report emphasizes the significance of the private sector's role in meeting the country's competitive challenge: "The breadth of our industrial base provides a rich environment for the creation and full development of new technologies and markets. It is also vital to our national security."

The vital role of competitiveness in today's global market was also discussed recently by Speaker of the House James C. Wright, who characterized it as "the dominant issue of the remaining years of the 20th century."



Chairman Flies Fighting Falcon. In his first flight in an F-16, Chairman and Chief Executive Officer Stanley C. Pace rode "back seat" on Mar. 27th in a Fighting Falcon attached to the 169th Tactical Fighter Group at McEntire Air National Guard Base, S.C. Flying with Lt. Col. Charles deVlaming, Flight Commander and Chief of Scheduling for the 169th TFG, Pace participated in a simulated air defense exercise that included several interceptions of "hostile" fighter aircraft. Pace, a B-24 pilot who flew 39 missions during World War II, took the controls of the F-16B and reported that he did "a couple of slow rolls, the second better than the first." In the photo inset, he showed his reaction after the flight.

Most Students Aim for Success in Business, Recent Nationwide Leadership Survey Shows

Three out of four high school students hope to be president of a company some day, but only one in five wants to be President of the United States, according to a nationwide poll on leadership recently commissioned by General Dynamics.

The survey was done in connection with the company's Outreach program to donate videotapes and teaching materials from its ongoing sponsorship of a Public Broadcasting television series on great leaders of the 20th century.

The company has offered the videotapes and study materials to 25,500 secondary schools with 20 million students. Some 8,500 schools with six million students

received videotapes of the first two shows, "Winston Churchill" and "Ike." Early returns indicate that even more will receive "Lyndon Johnson," which aired Apr. 8th as the third in the series of historically accurate, one-person programs.

The results of the leadership survey, conducted by Fleishman-Hillard, Inc. for General Dynamics, were publicized by the New York Times, Wall Street Journal, St. Louis Post-Dispatch, Associated Press, United Press International and other major media.

Charles Osgood reported the story on his morning CBS

(Continued on Page 3)

Survey Results Prompt New Smoking Policies

In response to comments received in the recent Employee Survey and citing a need to shift employee perception of a "workplace which generally allows smoking to one . . . (in which) smoking is not allowed," Chairman and Chief Executive Officer Stanley C. Pace has asked Safety and Health Department personnel corporatewide to begin work on policies which will reduce on-the-job employee exposure to tobacco smoke.

In an Executive Memorandum late last month to all division general managers, subsidiary presidents and corporate officers, Pace said that the action is being taken in

response to recent warnings by the Surgeon General concerning the risks of cancer and other diseases caused by "passive" smoking, as well as to the results of the recent employee survey which "indicate the majority of our employees see the need for a policy" on the issue. (See response analysis box accompanying this story.)

Pace cited a number of "key elements" to be considered in shaping such policies, including tobacco sales at company locations, establishment of designated smoking areas,

(Continued on Page 2)



Ethics Meeting Held. Kent Druyvesteyn, Corporate Ethics Program Director (left), and Robert L. Abernathy, Corporate Personnel Ombudsman, confer before the start of the first corporatewide meeting of Personnel Ombudsmen and Ethics Program Directors. "More Effective Listening" was the theme of the April 2nd-3rd meeting in St. Louis. Each group participated in half-day workshops aimed at improving listening skills. Participants were reminded that "the ability to be good listeners is the most important part of doing our job well."

U.S. Savings Bond Campaign Kicked Off At Apr. 16th Meeting of Division Chairmen

General Dynamics kicked off its 1987 U.S. Savings Bond Campaign at a meeting in St. Louis on April 16th. Bond Chairmen corporatewide met to review successful Savings Bond Campaigns of last year and to hear plans for this year's corporate campaign.

Company President Oliver C. Boileau presented the Gold Award for the highest division participation in 1986 to this year's Fort Worth Savings Bond Chairman, Rolf Krueger. Fort Worth attained 99 percent participation last year in bond purchases by its employees.

The Silver Award was presented to Alda Jorgenson, this year's Chairman for Space Systems, which posted 97 percent participation last year.

Barbara McDonald of Convair received the 1986 Gold Award for Volunteer of the Year, and Grace Gebbie, Norma Gebhardt and Ava Schumacher, all of Pomona, shared the 1986 Silver Award for Volunteer of the Year.

Boileau told attendees: "Savings Bonds are a good idea for our employees, for our company and for our nation."

"We have increased our participation rate from 65 percent in 1980 to 78 percent last year," Boileau said. "That increase occurred at a time when our total employee population grew from 73,000 to well over 100,000. During the same period, the number of General Dynamics em-

ployees who increased their allotments rose from 3,000 to 19,000, and I think that is indicative of the fact that our employees recognize the benefits of buying bonds through payroll deductions."

Last year, Convair posted a 94 percent participation rate, Pomona and Valley Systems each had 92 percent, Electronics and GD Services each had 87 percent, Electric Boat had 60 percent and Cessna had 50 percent.

The current interest rate for bonds is calculated at 85 percent of the market rate of all Treasury marketable securities every six months. For the past six months, the rate has been 6.06 percent. A new calculation will be made May 1st. At the end of five years, the 10 semiannual rates are used to determine a bond's five-year yield. Series EE Bonds held longer than five years have additional semi-annual market averages computed.

Bonds are backed by the U.S. Government and are replaced if lost, damaged or destroyed.

"General Dynamics, as a major defense contractor, derives most of its income from government business, and we have a responsibility to set an example for other companies in helping the government encourage American citizens to purchase bonds," Boileau said.

New GDSC Position Is Created to Pursue NASA Opportunities

Thomas R. Brown has joined General Dynamics Services Company as Director of NASA Operations.

Brown's appointment represents a new initiative by General Dynamics Services Company, working with Space Systems Division, to pursue opportunities aggressively in the NASA services/support and launch operations area.

For the immediate future, he will be located with Space Systems Division representatives in the Cape Canaveral, Fla., offices of Space Systems.



Brown

Brown comes to General Dynamics from Planning Research Corporation, a subsidiary of Emhart Corporation.

As Vice President of PRC Systems Services at John F. Kennedy Space Center, he was directly responsible for PRC's efforts supporting Space Shuttle ground servicing equipment and launch systems.

Brown was directly involved, in both a technical and managerial capacity, with the early Corporal, Redstone, Mercury-Redstone, Jupiter and Saturn Programs.

From 1961 through 1967, he served as Group Vice President with responsibility for several technical service-oriented companies of KDI Corporation and also spent five years as President of MBA, Inc., applying aerospace design and development techniques to manufacturing systems, tooling, test and process control equipment.

Companywide Survey Prompts New Policies To Reduce Smoking

(Continued from Page 1)

company-sponsored smoking cessation programs, state and local laws and other factors.

Divisions and subsidiaries are using different methods to implement the Executive Memorandum, including establishment of task forces from representative cross sections of employees and questionnaires to determine employee preferences on the subject.

Each division/subsidiary is establishing its own implementation plan and schedule, which will be submitted to the Corporate Director of Safety and Health by the end of this month.



General Dynamics in Thailand. Air Chief Marshal Prapan Dhupatemia, Commander-in-Chief of the Royal Thai Air Force, visits the General Dynamics stand at the Defence Asia '87 exhibition and conference in Bangkok Mar. 18th-22nd. Joe K. Jopling, Fort Worth Division Director of International Marketing-Pacific and South America, discusses with him two rotating models of the F-16 Fighting Falcon, one in Thai colors and the other in U.S. Air Force Thunderbird paint scheme. The Royal Thai Air Force will receive the first of 12 F-16A/B aircraft in 1988. Also featured at Defence Asia '87 were Pomona's Phalanx close-in weapon system and Cessna's Citation and Challenger aircraft adapted for military use.

Survey Results on Smoking Policy		
What would you like to see the smoking policy in your division be? (If you work in a city or state where there already are laws pertaining to smoking, indicate what additional action — if any — you feel your division should take.)		
Salaried	Hourly	Major categories of comment
33%	35%	Set up designated smoking areas/set aside separate place for smokers.
31	27	Eliminate smoking from workplace/prohibit smoking/no smoking inside facility/it's a safety and health hazard.
9	14	Current policy okay/how this division handles it is okay/leave as is.
9	4	Should be decided by work group/locally/by individual areas.
7	10	No restrictions/it's a civil right/none of company's business.
7	4	Better ventilation is needed/inadequate ventilation is the problem.
4	6	Miscellaneous.
100%	100%	

Most Students Aim for Success in Business, Recent Survey Shows

(Continued from Page 1)

Radio network show; it was aired on ABC-TV's national "Business Briefs" program and company spokesmen did interviews for radio talk shows in New York City, Philadelphia, San Francisco and elsewhere.

Among other findings from the national survey of 1,000 16- to 18-year olds were the following:

- Asked whom teenagers most admire, students put professional athletes at the top of the list, with 93 percent naming them. Eight out of 10 students named parents. At the bottom of the most admired list were local government leaders, at 26 percent.
- Asked to pick traits of successful leaders, almost all (96 percent) selected two: believing in yourself and being decisive.
- By a two-thirds majority, high school students indicated that successful leadership is learned, not inherited.
- On a history quiz section, virtually all students (98 percent) correctly identified the Rev. Martin Luther King Jr. as a civil rights leader. Nearly three out of four (73 percent) picked Sandra Day O'Connor as the first woman appointed to the U.S. Supreme Court.
- About half the students knew that Franklin Roosevelt was the author of the New Deal. About half picked Harry Truman as the President who decided to drop the first atomic bomb, and similar numbers associated Winston Churchill with the phrase "the Iron Curtain" and Lyndon Johnson with the Vietnam War.



World Leaders Brought into Classroom. Teacher Carolyn Wilson and students at Ritenour High School of Overland, Mo., view a videotape of the television program "Lyndon Johnson." The videotapes, posters and study guides are being offered free to 25,500 secondary schools by General Dynamics, which sponsored the 90-minute show on Public Broadcasting stations.

Teams Flying F-16s Take Top Four Places In TAC Competition

U.S. Air Force teams flying Fort Worth-built F-16s captured the top four places in the USAF Tactical Air Command's recent Long Rifle II gunnery meet at Luke AFB, Ariz. The two other F-16 teams in the competition placed sixth and ninth out of the field of 16 teams.

Long Rifle is a semi-annual competition of all active duty fighter wings in the Tactical Air Command's 9th and 12th Air Forces. Each wing sends four aircrews which are randomly selected just prior to the meet to provide a representative sample of aircrew capability in each wing.

Missions are flown non-stop from the wings' home bases, using in-flight refueling if necessary. The teams proceed to the target at low level to meet their assigned range times, then land at the competition's host base after delivering weapons.

The competition consists of four bombing events and one strafing event, with no practice runs.

The 58th Tactical Training Wing from Luke AFB, Ariz., placed first in Long Rifle II with a team score of 2,853 points. The 388th Tactical Fighter Wing, Hill AFB, Utah, placed second with 2,538 points, and the 363rd TFW, Shaw AFB, S.C., placed third with 2,528 points. The 474th TFW, Nellis AFB, Nev., was fourth with 2,470 points.

F-16 pilots also dominated the individual standings, taking 14 of the top 15 positions. The Top Gun award went to Maj. Jim Henderson of the 58th TTW, who scored 721 points.

Other aircraft types in the competition included A-10A, F-4D/E/G and F-111A/D models.

Long Rifle II marked the fifth time that pilots flying F-16s have participated and excelled in bombing competitions.

Convair, Freeman United Earn Safety Honors

Convair has been awarded the Chairman's Award of Honor for excellence in its safety and health performance for 1986, and Freeman United Coal Mining Company has earned a Certificate of Achievement for exceptional performance in its safety and health program for the year.

The awards were announced recently by Chairman Stanley C. Pace.

In a letter to Convair General Manager John E. McSweeney, who is now serving as Valley Systems Vice President and General Manager, Pace noted that the award marks the 13th consecutive year in which Convair has received corporate recognition for the quality of its overall safety program.

"This award is presented to the division which meets all established occupational injury and illness rate goals, has no occupational fatalities during the year, has no Safety and Health Program key elements rated unsatisfactory during the annual Safety and Health Audit and Program Evaluation review and attains a rating of at least 100 points during the SHAPE review," Pace said.

In a letter to Lucian A. Lincoln, Chairman of Freeman United, Pace said, "The Surface Mining Operations met all established goals, experienced no occupationally related fatalities and demonstrated a comprehensive Safety and Health Program as measured by the SHAPE review program."



An M1A1 Tank During Winter Warrior Maneuvers in Germany

First M1A1-Equipped Army Unit in Europe Reports 98% Tank Readiness in Maneuvers

Land Systems-built M1A1 tanks maintained a 98 percent operational readiness rate during their first European maneuvers as part of the 3rd Infantry Division's recent Winter Warrior exercise.

Tankers of the 4/66 Armor Battalion, the first in Europe to be upgraded with the M1A1 system, received the new tanks just two weeks before the exercise.

Winter Warrior was held north of Schweinfurt, West Germany, between the Main River and the East German border. The M1A1 maneuvering involved extensive cross-country travel through the farmlands of the exercise area. Extended cold weather before the exercise froze the ground, creating ideal conditions for the maneuvers.

Operating in their tanks through long hours and subzero temperatures gave crewmen the opportunity to learn about and evaluate the new vehicle. Features especially appreciated by the crews included added stowage space provided by the turret bustle rack and the new commander's ammunition door guard; increased stability for smoother cross-country travel; changes in the heater ducting that helped keep the driver's feet warm; and the backup heating capabilities of the nuclear-biological-chemical system.

The crew's reactions were reported by Robert Rosado and Steven Stein, Land Systems representatives assigned to the Winter Warrior exercise.

Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	Feb. 1985	Feb. 1986	Feb. 1987
Salaried			
Government Bonds	9.3%	17.0%	9.2%
Diversified Portfolio	27.5%	35.8%	31.9%
Fixed Income	12.4%	12.3%	12.0%
Hourly			
Government Bonds	9.3%	16.4%	9.4%
Diversified Portfolio	27.2%	35.8%	33.4%
Fixed Income*	N/A	12.4%	11.9%
GD Stock Closing Price	\$79.25	\$76.62	\$78.75

* Fixed Income effective 6/30/85

Top Cessna Salesman Refuses to Give In To Depressed Market

The business jet aircraft market was down again last year, but Cessna Citation Regional Sales Manager Erik P. Hansen refused to be a part of the depression.

In 1986, Hansen, whose territory includes Minnesota, Wisconsin and upper Illinois, wrote orders for 14 new Citations and participated in the sale of another.

To put that in perspective, only one competitor sold just one business jet in Hansen's territory last year.

In fact, Cessna's supersalesman, who was named Regional Sales Manager of the Year, single-handedly sold more aircraft in 1986 than several competing companies sold last year in the entire United States.

However, this is nothing new for the former commuter airline pilot who sold heavy construction equipment in the New York area before joining Cessna 10 years ago.

Hansen has sold a grand total of 84 Citations in his upper Midwest territory during that decade and also led all Citation salesmen in 1982 and 1985. In addition, he topped his division in five of those 10 years.

Last year, the nine Citation IIIs and five Citation S/II's he sold contributed \$69 million to total revenues — 23 percent of all domestic new Citation sales.

Recent Citation customers in Hansen's territory include Dayton Hudson Corp. and Cargill, Inc., in Minneapolis and the Quaker Oats Co. in Chicago.

There are 14 Citation regional sales managers in the United States and Canada and six in the international marketplace. Cessna's Citation Marketing Division led the industry again last year with 93 sales and delivered more aircraft than the next three competitors combined.

Hansen, who received a business administration degree from Adelphi University in Long Island, N.Y., lives with his wife, Cheryl, and two children in Arlington Heights, Ill.



Top Citation Salesman. Erik P. Hansen holds plaque he received as Cessna Aircraft Company's Regional Sales Manager of the Year.

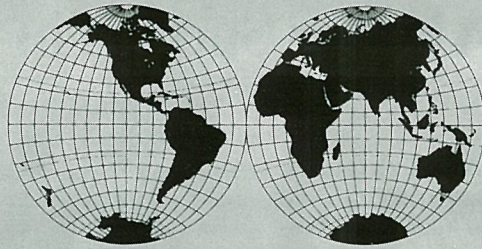
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Manager of Internal Communication: Edward D. Williams

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Jim Gilkerson, Dean Humphrey, Jack Isabel,
Jerry Littman, Karl Oskoian, Jack Price,
Tom Rule, Joe Stout, Z. Joe Thornton



Around the World

CHQ: William R. Summers Jr. joined as Corporate Huntsville Representative . . . David M. Edwards as Auditor . . . Gary L. Giesen transferred from Fort Worth and was promoted to Senior Subcontract Auditor . . . Luther L. Chesser transferred from Fort Worth and was appointed to Director-International Offset/Europe . . . Sally E. Bub was promoted to General Accounting Supervisor . . . Allen Langston Jr. to Corporate Security Manager . . . Elaine M. Foster to Staff Accountant . . . Lee J. Schneider to Human Resources Systems Specialist.

Fort Worth: Jack W. Abbott was promoted to Support Program Management Chief . . . Robert H. Anderson to Senior Project Engineer . . . Ralph M. Beaugez III and Hector J. Ramirez to Material Program Administrator . . . Stephen A. Berg, Robert L. Brazil, Terry V. Greenroy and Kenneth W. Hartman to Production Specialist . . . Jackie L. Bibbs to Inspection Supervisor . . . Randy J. Bruna and Robert J. Matus to Financial Supervisor . . . Monte C. Burns to Procurement Manager . . . Martin G. Butorac, John D. Fatheree Jr. and Walter H. Tucker to Manufacturing Technology Supervisor . . . Charles K. Clark, Ralph A. Kindler, David T. Lowrance and Hoyt L. Stevens to Project Engineer . . . Johnny H. Davis to Coproduction Management Specialist . . . Robert B. Driskill and Cathy E. Durham to Material Planning Supervisor . . . Paul L. Emond to Program Specialist . . . John A. Fergione Jr. and Harold H. Hughes to Engineering Chief . . . Maynard W. Feters to Material Receiving and Disbursement Chief . . . Darrell H. Francis and James D. Manley to General Foreman . . . Guy S. Gordon to Numerical Control Manufacturing Specialist . . . Terry L. Hamilton to Industrial Engineer . . . Marvin P. Hatchett Jr. to Industrial Engineering Supervisor . . . Paul A. Henkel and Robert F. Reams to Engineering Program Manager . . . James L. Hodgkins III and Philip L. Schwab to F-16 Programs Manager . . . David A. Johnson to Program Specialist . . . James D. Jones and Sarah M. Suarez to Logistics Group Supervisor . . . J.B. King to Purchasing Agent . . . Calvin D. Lane to Manufacturing Control Supervisor . . . Ben F. Langley to Engineering Specialist . . . William E. Dowell, Joseph M. Lion and Gary W. Palafox to Project Manager . . . Dick C. McCarty to Logistics Specialist . . . Dan R. Moore to Project Specialist . . . William L. Powell and Richard L. Thompson to Inspection Supervisor . . . George P. Rambo III to Logistics Supervisor . . . David M. Rapisand to Finance Chief . . . James B. Roach II to Proposal Planning Manager . . . Billy J. Sadler to Quality Assurance Chief . . . Vernon L. Salzman to Engineering Manager . . . Carney B. Scott Jr. to Traffic Foreman . . . Trent L. Sherrill to Senior Industrial Engineer . . . Harlon E. Smith to F-16 Planning and Controls Chief . . . Kevans Sublet to Engineer . . . Archie R. Taylor to Engineering Administrative Supervisor . . . Richard W. Totten to Tooling Supervisor . . . Frank E. Weaver to Schedules Specialist.

Convair: Robert B. Anyon was promoted to Manufacturing Engineering Chief . . . Charles L. Bennett, Neal C. Haas and Clifford Leong to Group Engineer . . . Michael E. Brown to Product Support Chief . . . David B. Clausen to Operations Manager . . . Duane L. Daugherty to Manufacturing Operations Supervisor . . . Richard A. De Luca to Manufacturing Control Operations Supervisor . . . Ruth E. Herring to Operations Supervisor . . . Peter Homa to Project Engineer . . . Didi C. Grant to Financial Supervisor . . . Elizabeth Gray to Publications Supervisor . . . Frank Jenkins III to Manufacturing Control Operations General Supervisor . . . Paul E. Kane to Program Manager . . . Edward E. Keller to Engineering Chief . . . Jerome W. Kemp to Finance Chief . . . Willard E. Kinney Jr. to Logistics Supervisor . . . Connie J. Mallett to Accounting Supervisor . . . Charles H. Stanley to Finance Manager . . . Odis D. Kirkpatrick and Lawrence C. Lookenbill to Plant Protection Lieutenant.

Space Systems: Edward H. Bock and John G. Bodle were appointed to Engineering Director . . . Howard F. Biegler Jr., Ronald L. Bradley, Edward C. Lambert, Howard L. Phillips, Edward A. Sly and Jonathan S. Wyse were promoted to Senior Engineer . . . Robert G. Brater, Carl F. Brock, Raymond J. Gorski, Dennis L. Jack, Virgil D. Muilenburg, David B. Rodger, Mark J. Sedillo and Robert J. Ward to Engineering Specialist . . . Gayle D. Costanzo to Engineering Procedures Specialist . . . Sharon P. Hackney to Technical Buyer . . . Daniel M. Little to Material Advisor . . . Kathryn M. Milhaud to Procurement Administrator . . . Rudolph L. Ortega to Senior Engineering Specialist . . . George E. Shields to Senior Human Resources Representative . . . William E. Stewart to Financial Specialist.

Electric Boat: Paul N. Aas was promoted to Radiological Control Manager . . . Leon Locktov to Weapon Systems Support Manager . . . James J. Barney to Site Purchasing Manager . . . Alan S. Perlstein to Site Cost/Administration Manager . . . Graham Reichenbach to Site Nuclear Test Manager . . . Gary C. Burgess to Superintendent . . . Russell E. Fiskin to Radiological Control Operations Superintendent . . . Anthony L. Eaton to Human Resources Site Chief . . . Robert C. Griswold to Engineering Site Chief . . . William L. Katkaveck to Program Management Chief . . . Arthur V. Pintauro to Engineering Chief . . . Herbert H. Swedin to Technical Publications Chief . . . Michael R. Dudley to Chief Administrator . . . John G. Terranova to Material Planning Senior Supervisor . . . Eugene W. Benton to Logistics Supervisor . . . Paul Cavanaugh to Design Services Supervisor . . . William Edwards to Design Supervisor . . . Glen E. Moorehead, Herman Smith and Allen J. Whewell to Technical Services Supervisor . . . Eugene D. Stirlen to Production Methods Supervisor . . . Thomas A. Fawthrop, Kenneth D. Holcomb, John Jones, Curtis S. Knight, Alvin Lewis, James J. Patrick, Mark Simonds, Beverly A. Strickland and Edward Zubritsky to Foreman . . . Arthur C. Howard to Group Trade Planner . . . Charles L. Wright to Administration/Control Coordinator. At Charleston, Joseph Churma to Facility Controller. At Quonset Point, Mark S. Page and Joseph R. Pelletier to General Foreman.

Pomona: David E. Gibbs was appointed to Director-Program Product Assurance/Phalanx . . . John A. Anderson II was promoted to Systems & Procedures Chief . . . Frank Castaneira to Manufacturing Development Specialist . . . Lloyd E. Dorsey to Quality Assurance Manager . . . Nancy S. Fredrick to Suggestion Program Chief . . . Robert A. Howery to Development/Training Chief . . . Ann C. Keller and Anna L. Pearman to Project Coordinator . . . Charles J. Kubes to Phalanx Block/I&R Program Manager . . . Richard E. Lovelace and Michael S. Medvetz to Contracts Chief . . . Michael C. Martin and Wade M. Smith to Senior Project Engineer . . . Richard J. Nash to Manufacturing Group Engineer . . . Frank W. Nichols and John J. Thornburg to Group Engineer . . . Andros Thomson Jr. to Superintendent . . . Sydney L. Torrey to Management Systems Specialist . . . Daniel R. Williams to Material Liaison Representative . . . Linda S. Lawson to Accounting Supervisor . . . James A. Wilson to Financial Compliance Manager . . . Karen A. Olsen to Human Resources Representative.

Land Systems: Krishna K. Relan, Rosalind L. Spina, John Reilly, Alan K. Aouate, Paulus Kersten, Ronald P. Michalzuk, Joseph P. Riolo, Patrick M. Kosnik, William L. Zombory and Gary L. Ernsting were promoted to Engineering Supervisor . . . Bruce A. Duncan to Material Planning & Control Supervisor . . . Gregory J. Vishey to Senior Program Management Representative . . . Gerald P. Dailey to Assistant Program Manager . . . Michael R. Sullivan to Senior Material Planning Analyst . . . Walter H. Schindewolf and Donald H. Stiers to Engineering Services Supervisor . . . John J. Gavin and Robert V. Sorge to Group Engineer . . . Richard J. Thompson, Faiz M. Khan and Alan J. Stallard to Engineering Chief . . . Alfred N. Carson to Superintendent . . . Clark S. Brown to Training Administrator . . . Sherryl D. Love to Procurement Chief . . . James D. Schatz to Material Planning & Control Chief.

Data Systems: At Western Center, Anne M. O'Rourke was promoted to Software Design Specialist . . . Carol A. McClanahan to Senior Software Engineer . . . Susan L. Saussol to Computer Trainer . . . David S. Trailer to Engineering Software Supervisor . . . William E. Halquist to Computer Systems Specialist. At Central Center, James H. Kirk and Richard A. Edwards to Engineering Software Supervisor . . . Lawrence G. Dapra to Teleprocessing Manager.

GDSC: Karl J. Davis was promoted to Workshop Group Leader . . . Michael A. Brooks to Program Administration Supervisor . . . William P. Conley to Senior Aircraft Specialist.

Navy Completes Developmental and Operational Test Firing of RAM

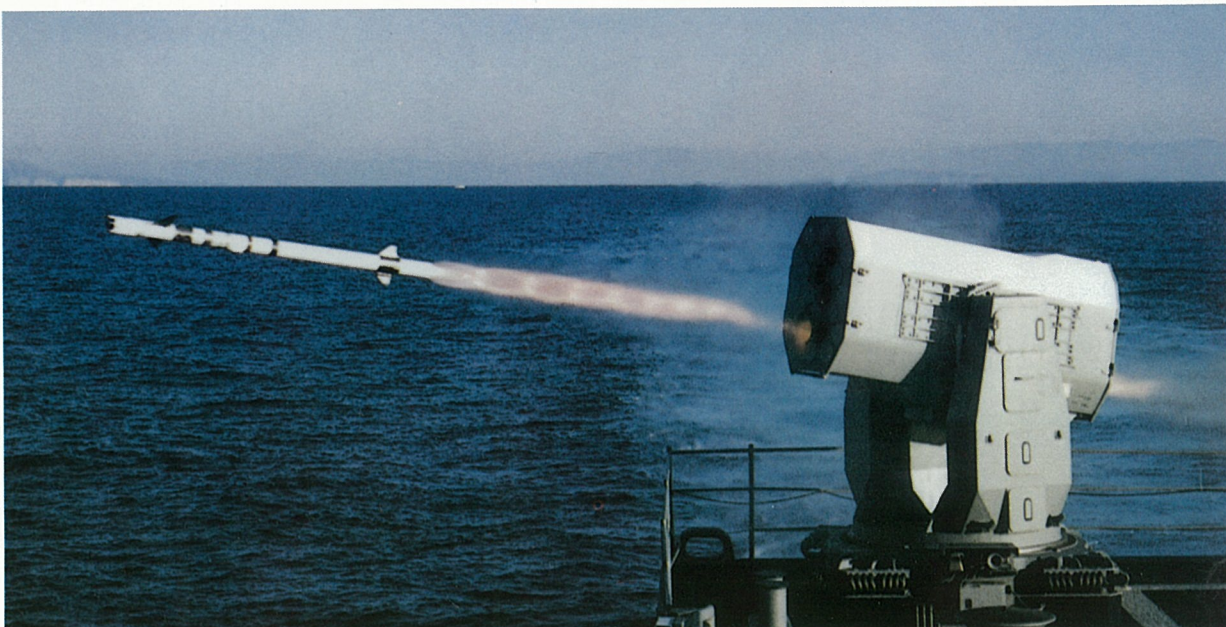
U.S. Navy test firings of the Rolling Airframe Missile (RAM), produced by the Valley Systems Division, resulted in 11 successful intercepts out of 13 launches.

The firings, begun in December and completed in February, were part of the Navy's developmental and operational test (DT/OT) program for the RAM Weapon System. Testing took place on board the destroyer USS *David R. Ray* operating in the Pacific Missile Range, at White Sands Missile Range in New Mexico and at San Nicholas Island off the California coast.

RAM is a lightweight, quick-reaction, high-firepower weapon system designed to provide antiship missile defense. The full RAM combat system, including the missile, launch equipment, shipboard radar, electronic support measures set and weapon control computer program, was integrated and evaluated during the testing.

Subsonic and supersonic targets were engaged in single attacks, dual target wave attacks and dual target stream attacks in the tests. The system's capabilities were tested against maneuvering targets and targets attacking in fog, rain and in the presence of sun glint off the ocean surface. The tests demonstrated RAM's guidance accuracy, integrated combat system performance and overall reliability.

RAM is being developed cooperatively by the governments of the United States, West Germany and Denmark and is the first joint development program between the U.S. and NATO countries. Joint development, which makes use of each country's expertise, is a significant step toward achieving standardization and interoperability of NATO defensive systems.



Rolling Airframe Missile Launched from the USS *David R. Ray*

U.S., German and Danish industry have contributed to the development program for the RAM Weapon System by providing engineering and manufacturing for both the missile and the launch equipment. German navy and government representatives helped plan and conduct the recent DT/OT firings.

Based upon DT/OT results and certification by the

Secretary of Defense that certain program requirements have been met, the RAM program could receive approval for limited production by mid-1987. Such approval would initiate pilot production of RAM in the United States. Concurrently, activities to prepare German industry to compete for subsequent missile production contracts are also under way.

Corporate Security Director Issues Warning: Damage by Hostile Intelligence Is Staggering

Penetration of U.S. security by hostile intelligence services over recent years has been staggering, according to William I. Ferrier, Corporate Director of Security.

"The Senate Intelligence Committee, after reviewing recent espionage cases, technical security compromises and technology transfers, has concluded that the actual and probable injury to our country has been immense," Ferrier said.

"It is vitally important that General Dynamics employees recognize clearly the extent and gravity of the damage to national security interests," he said.

The Senate Intelligence Committee, Ferrier said, reported the following:

- U.S. military plans and capabilities have been seriously compromised.
- U.S. intelligence operations have been gravely impaired.
- U.S. technological advantages have been overcome in some areas.
- U.S. diplomatic secrets have been exposed to our adversaries.
- Sensitive aspects of U.S. economic life have been subjected to constant Soviet monitoring.

Ferrier said that the recent discovery of "bugged" typewriters in the U.S. embassy in Moscow revealed that for years the Soviets were reading some of our most sensitive diplomatic correspondence, economic and political analyses and other communications.

"More difficult to assess is the Soviet interception of U.S. communications," Ferrier added. "The Soviet monitoring involves U.S. domestic telecommunications channels, including most satellite links and certain ground-to-ground transmissions."

"In this interception, there has been special emphasis on defense contractors," he said.

Defense contractors must be especially vigilant because hostile intelligence services already have acquired sensitive technological data in the U.S., Western Europe, Japan and elsewhere, he said.

"Soviet acquisition of U.S. technology has significantly reduced the time it took the Soviets to develop new weapons systems and field countermeasures to U.S. systems," Ferrier said.

"There is much that we as General Dynamics employees can do to strengthen our nation's defense," he said. "The key requirements are vigilance and knowledge of the dangers."

Company Honors Ethics Awareness Workshop Leaders

The company recently recognized employees who served as leaders in the more than 750 Ethics Awareness Program Workshops or briefing sessions conducted for 99,774 General Dynamics employees in the United States, Korea and West Germany during 1986.

The 117 employees were cited for "extraordinary contribution to the implementation of the Ethics Program and the further integration of the values of individual employees into the life of the corporation," according to a framed certificate presented to each leader. The certificates named each of the employees an "Ethics Program Fellow," and were signed by Stanley C. Pace, Chief Executive Officer, Kent Druyvesteyn, Corporate Ethics Program Director and the General Manager and Ethics Program Director at each awarding facility.

Druyvesteyn, who attended several of the recognition sessions, said that he spoke for the corporation in voicing appreciation for the efforts extended by the workshop leaders. "Ethics are a matter of attitude rather than special skills," he said. "That's why leadership is so important to the success of our program."

Navajo Tribe and General Dynamics Praised for Spirit of Cooperation

Peter MacDonald, Chairman of the Navajo Tribal Council, praised both General Dynamics and the Navajo Nation for their continuing cooperation in the operation of the Pomona Division's Navajo Facility.

MacDonald was the keynote speaker at dedication ceremonies marking expansion of the company's facility at Window Rock, Ariz.

Pomona has operated a 28,000-square-foot building on the Navajo Reservation since 1967. The new \$1-million, 15,600-square-foot expansion permitted the consolidation of electronic assembly work now performed in temporary trailers.

MacDonald cited General Dynamics as an excellent example of how productive it is for companies to invest in the Navajo reservation.

"You have demonstrated," he told General Dynamics executives and employees, "that the atmosphere for company stability, security and profitability is possible here on the reservation."

Also addressing the audience, which included tribal and community leaders, was Sterling V. Starr, Vice President and Pomona General Manager.

Starr noted that the Navajo employees "have superior dedication and are a valuable part of our family. This expansion will significantly increase the plant's capacity to produce electronic components."

The original plant was constructed by the Navajo Tribal Council and occupied by General Dynamics under terms of a lease which was renegotiated recently for 15 more



Navajo Dedication. Peter MacDonald, Chairman of the Navajo Tribal Council, delivers keynote remarks during dedication ceremonies held by Pomona for the 15,600-square-foot expansion to the Navajo Facility. Looking on are (from left, seated) Lt. Cmdr. Ryan Wise of the Naval Plant Representative Office at Pomona; Al Henderson of the Navajo Tribal Economic Development Council; Johnny Thompson, Vice Chairman of the Navajo Tribal Council; and Sterling V. Starr, Pomona General Manager.

years.

The lease agreement also provides for doubling the current plant property to 10 acres.

The expansion project was jointly financed by a U.S. Economic Development Administration grant, the Navajo Nation and Pomona.

The work force at the Window Rock plant totals 400 skilled employees who are engaged in the high-quality assembly of electronic circuit cards, wire harnesses and cables for Phalanx and Standard Missile.

Last year, the employees produced 80,000 circuit card assemblies and 128,000 flex harnesses and cables.



Honored Guests. U.S. Air Force Space Division guests and General Dynamics officials who participated in ribbon-cutting ceremonies for the new Space Systems Division thermal and acoustic test facility are (left to right): Lt. Col. James O. Rogers, Division Chief-Centaur Development; Col. (Brig. Gen. Selectee) Donald G. Hard, Deputy Commander-Launch and Control Systems; Dr. Alan M. Lovelace, Space Systems Vice President and General Manager; Col. Stephen Richard, Director-Integration and Operations; and Andy T. Calimbas, Project Manager, Thermal/Acoustic Facility. In the photo at right, a Centaur launch vehicle test article is shown in the thermal chamber of the new test facility.



Ribbon-Cutting Ceremonies Are Held at New Space Systems Facility

Space Systems Division held ribbon-cutting ceremonies Mar. 12th for its new acoustic and thermal test facility.

The facility was designed to test the Centaur launch vehicle built by Space Systems and other next-generation spacecraft. It provides temperature and sound conditions simulating those found at liftoff and during other operating modes.

"This facility is one of the world's largest integrated high-intensity acoustic and temperature cycling chambers now in operation," said Dr. Alan M. Lovelace, Vice President and General Manager of Space Systems. "It will significantly enhance our industry's test standards in support of the goals of the United States space program."

The facility's 65,000-cubic-foot acoustic chamber can generate sound levels up to 154 decibels (dB). (For comparison, average traffic is 75 dB, a loud auto horn is 115 dB and a sonic boom is 130 dB.) The 46,500-cubic-foot temperature chamber can cycle large test articles between minus 45 degrees Fahrenheit and plus 185 degrees Fahrenheit at a rate of one degree per minute.

Test articles requiring sequential acoustic and thermal testing can be moved quickly and easily from chamber to chamber via the interconnecting bridge crane. This feature alone represents a significant improvement in efficiency over other test facilities.

The facility monitors a test article's reaction to controlled vibration and thermal stress in real time. With the installation of the first Hewlett-Packard ME Series 90 High-Speed Digital Acquisition System to obtain, store and process vibration and acoustic data, it is possible to view stress data only a few seconds old during the course of a test to ensure protection of the test article.

This new and more powerful digital processing software package will continue to improve the speed with which test data can be assembled. An initial processing time of four hours to collect and distribute 250 channels of input has improved to such a degree that a planned processing speed of 90 to 120 minutes is expected to be achieved by mid-1987. Even now this technique is ten times faster than older systems.

Thermal test data is acquired using an HP 3497A Data Acquisition/Control Unit with an HP Series 300 Computer System. The system can also process a variety of other measurements, such as strain gage data and analog and digital signals.

Both test chambers and the connecting staging area are controlled as clean-room areas so that spacecraft cleanliness requirements can be maintained, even during transfers between chambers. In addition, the facility has the capability to store and dispense cryogenic liquids to the Centaur launch vehicle.

The facility was designed and built as a joint effort among NASA, the Department of Defense and Space Systems. General contractor on the project was Norman Engineering, Inc. of Los Angeles. Guests from NASA, the U.S. Air Force and other associated contractors attended the ribbon-cutting ceremonies at General Dynamics' Kearny Mesa plant.

Engineers Get Experience with USAF and Navy Flight Line Technicians

Three structural design engineers at Fort Worth increased their knowledge of the operation and maintenance of military aircraft recently through a U.S. Air Force program which encourages designers from industry to "walk in the shoes" of USAF flight line technicians.

Senior engineer Marc Upchurch and engineering specialists Tom Partridge and Larry Bersuch made visits to Hill AFB, Utah, McClellan AFB, Calif., and North Island Naval Air Station, Calif., as part of the USAF's Blue Two visit program.

At Hill AFB, they and representatives of several other aerospace firms observed F-16 maintenance operations of the 388th Tactical Fighter Wing and held candid discussions with F-16 crew chiefs. At McClellan AFB, they discussed inspection techniques used on Fort Worth-built F/FB-111s and, at North Island NAS, they toured the Naval Air Rework Facility.

The Air Force Coordinating Office for Logistics Research sponsors the Blue Two visit program as part of the service's effort to increase the reliability and maintainability

of weapons systems. The program is intended to promote interaction among Air Force personnel and contractors, and to deal with aircraft design issues.

In the visits made by Upchurch, Partridge and Bersuch, special emphasis was put on composite applications in the structural design of current USAF and Navy aircraft, and the services' composite repair capabilities, said Upchurch. A long-term aim is to provide engineers with knowledge that they can use in the design of future aircraft, he said.

"At Hill AFB, we talked to the flight line personnel and asked them what problems they're having and what they'd like to see done better," said Partridge. "We got to know some of the crew chiefs, which makes it easier for us to visualize the end users of the aircraft. One thing we learned is that they take a lot of pride in their airplanes," he said.

The engineers also became aware of design aspects of certain systems that they don't normally consider, he said. "We got to open some access covers and hatches on airplanes that we never have occasion to open in Fort Worth. Trying to open a stuck hatch or using a screwdriver during winter in Utah can be very enlightening."

Chief Master Sgt. Donnie Hallam, Maintenance Superintendent for the 388th TFW, said Blue Two visits have also been beneficial for the Air Force.

At McClellan AFB, the Blue Two group toured aircraft battle damage repair areas and discussed changes that may be required as a result of the increased use of composites in aircraft, said Bersuch. Inspection and repair techniques for A-10 aircraft were discussed along with F-111 applications, he said.

At the Naval facility, the engineers became more aware of Navy maintenance concepts and how they differ from the Air Force's maintenance system, Upchurch said.

The Navy is scheduled to receive its first F-16N, for adversary aircraft use at the Top Gun air combat training school, on Apr. 29th.

Upchurch said the Blue Two visits gave the industry representatives a broader perspective of the work they do as designers. "When you're getting ready to draw something, it's a big help if you've seen similar equipment in the field and understand how it's used and maintained," he said.



Blue Two Visitors. Fort Worth engineers Tom Partridge, Marc Upchurch and Larry Bersuch (left to right) recently participated in the U.S. Air Force's Blue Two visit program.

Land Systems Robots Might Be the Combatants of the Future By Joe Stout

Robotic technology has been used to minimize human involvement in dangerous tasks like retrieving satellites, defusing bombs and exploring undersea shipwrecks.

So doesn't it make sense that robots could be used to fight a war?

General Dynamics, through Land Systems, is one of several defense companies currently researching the potential land combat applications of robotics. The division's work has already produced two robotic vehicles, the Robotic Research Vehicle 3 (RRV 3) and a teleoperated mobile missile platform, which were recently demonstrated for Army and other government personnel in Michigan, Colorado and Minnesota.

A "driver" demonstrated the RRV 3 in a command post more than a mile from where the vehicle performed a remote reconnaissance mission under his control.

In the missile platform demonstration, an operator using a backpack controller directed the vehicle to drive down a dirt road and fire four antitank missiles, scoring direct hits on a distant target.

The RRV 3 and its mobile evaluation laboratory and command post, which is called the Experimental Vehicle Analysis Laboratory (EVAL), were developed by an industry team composed of General Dynamics, the Cadillac Gage Company of Warren, Mich., and Hughes Aircraft of California. Land Systems was the lead contractor in the effort, called the Advanced Ground Vehicle Technology program, and the Defense Advanced Research Projects Agency (DARPA) was the program sponsor.

"The purpose of Advanced Ground Vehicle Technology is to integrate several capabilities that had been developed under earlier programs into a single vehicle and to demonstrate the sorts of things that are possible through robotics," said Francis A. Lunsford, Land Systems' program management chief for the effort. "The reconnaissance application was chosen because it is well suited to this particular vehicle and the danger factor of reconnaissance makes it a good use for robotics."

The RRV 3 is based on the Cadillac Gage Commando Scout, a four-wheel-drive, rover-type vehicle that is currently being used by the armed forces of several U.S. allies. The vehicle is modified with servo controls for its steering, throttle, transmission and braking functions, plus an automotive dynamics sensor suite that is coupled to these functions through computers.

A driver in the EVAL trailer can command the RRV 3 to go forward, backward, speed up, slow down or turn via a microwave link. The driver's console in the EVAL is equipped with a conventional steering wheel, brake and accelerator pedal to make control of the RRV 3 as simple as possible, said Lunsford.

The driver maintains visual contact with the RRV 3 via video cameras mounted on the vehicle and a set of television screens on the driver's console. Among other views, the cameras show where the RRV 3 has been and where it is going.

Sensory feedback from the vehicle is not limited to visuals, however. Servos inside the EVAL work in concert with those on the RRV 3 and vibrate the steering wheel as the vehicle goes over bumps and rough stretches of road or terrain, to give the driver the "feel" of the road. In



Robotic Combat Vehicles. Land Systems employees John J. Giganti (left) and Francis A. Lunsford are shown with the teleoperated mobile missile platform and Robotic Research Vehicle 3 (RRV 3) at the Chelsea Proving Grounds in Michigan. Giganti is program management chief for the teleoperated mobile missile platform, while Lunsford coordinates the division's efforts in the Advanced Ground Vehicle Technology program, under which the RRV 3 was developed.

addition, microphones on the vehicle allow the driver to hear the rev of its engine and the rattles and scraping sounds it makes as it traverses its directed course.

The RRV 3's remote operation capability, however, is not its most significant feature, relative to the potential use of its technologies in the field, Lunsford said. "The vehicle can actually drive itself," he said. "The RRV 3 and EVAL incorporate road-following software that enables the vehicle to follow a road by computing the necessary steering, brake and throttle commands, which are fed to the servo system."

This road-following system digitizes visual images "seen" by a sensor on the RRV 3 and feeds the images back to the vehicle's command and control computer, which converts them to a reference trajectory to guide the vehicle.

"The autonomous capability, when expanded and fully developed, will lead to great advantages in Army field operations," Lunsford said. "Eventually, the technology will allow a vehicle to avoid obstacles and recognize targets as it steers itself over a planned course from one point to another, even over great distances. One operator in a command center will be able to control multiple vehicles at the same time, resulting in force multiplication benefits."

The EVAL is equipped with a video map and planning system that is being used to explore related concepts, such as advance planning of a robotic vehicle's mission. The map, displayed on a large television screen, shows trees and topographical features of the terrain being covered, as well as the real-time location of the RRV 3.

When an operator in the EVAL selects a "target" that he sees on one of the EVAL's television displays, he can activate a trigger which controls an eye-safe laser range-finder mounted on the RRV 3. The laser, part of the vehicle's reconnaissance mission module, computes the distance to the target, which then appears on the television map for future reference.

In addition to the driver's console and the reconnaissance operator's console, called the commander's station, the EVAL is equipped with a test director's station for use in analyzing the capabilities being explored. "The EVAL is a complete laboratory facility for robotic vehicle research," Lunsford said. "Besides exploring robotic technologies, we're exploring the related human factors, such as how efficiently a driver can interact with the complete system," he said.

General Dynamics has program management responsibility for the Advanced Ground Vehicle Technology program and designed the EVAL, integrating its various systems. Cadillac Gage built the RRV 3 and driver's station, and Hughes Aircraft supplied the reconnaissance mission module and map and planning system.

The RRV 3 and EVAL are research tools, not prototypes, Lunsford said. "The program embodies some of the technologies that would be used in a production system, but not necessarily in the same forms. For example, microwave communications between the RRV 3 and EVAL were selected because they were readily available commercially. A production system would require secure, jam-proof communications," he said.

The Army is planning further evaluation of the RRV 3 and EVAL in the near future. "We'll train drivers and commanders from the Army's ranks, and they'll use the vehicle in war games to see how it performs in realistic combat scenarios," Lunsford said.

General Dynamics' other robotic vehicle, the missile platform, is a small, lightweight vehicle that is controlled through a fiber optic data link to its driver. General Dynamics designed and developed the preliminary demonstration system, said John J. Giganti, Land Systems' program management chief for the system.

"The number one priority of a system like this is to save soldiers' lives by taking the infantryman out of a lethal environment," Giganti said.

The vehicle has four independent wheel motors that are electrically powered by a small diesel generator. The vehicle carries four AT-4 anti-armor missiles and is also equipped with a video camera that transmits images back to the operator for use in driving and targeting.

The operator's controls are similar to those on a motorcycle, with handlebar steering, a wrist-operated throttle and a brake lever, Giganti said. A small display mounted in the center of the handlebars displays the video picture and provides fire control. The controls are linked to a backpack which houses the system's electronics.

"In use, the vehicle will feed out fiber optic cable as the operator drives it to a remote location. Or, it can be hidden beside an enemy tank route and activated from a safe distance when a target approaches. The vehicle is designed to be low in cost and expendable," he said.

Giganti said one driver could control as many as three of the vehicles. The unit's fire control system will also provide better firing accuracy than hand-held, anti-armor weapons, he said.

The Advanced Ground Vehicle Technology program, the missile platform and similar efforts by various contractors are showing that robotics could be used on the battlefield in the foreseeable future to improve combat effectiveness and avoid casualties, said Charles Beaudette, Project Engineer at the Army's Tank-Automotive Command headquarters at Warren, Mich.

"All of the basic technologies used in these programs are going to have to be worked on and further demonstrated," he said. "Then, the next step will be for the users to say what type of systems they want."



Command Post. The RRV 3 driver's station (left) and reconnaissance commander's station inside the Experimental Vehicle Analysis Laboratory. Television displays aid in remote operation of the vehicle.

Convair Employees Assigned to Europe Are Highly Motivated

By Julie C. Andrews

This is the second in a series of articles on the experiences of General Dynamics employees and families living and working abroad on foreign assignment.

Challenging work, adventure and travel opportunities were common motivations for Convair employees and their families who accepted assignments in Europe to provide technical support to the U.S. Air Force as the Ground Launched Cruise Missile (GLCM) system was installed at NATO bases.

The first team went to Greenham Common, England, followed by teams to Sicily, Belgium and West Germany as each GLCM wing was activated. Although some of the Convair employees had spent time abroad during military service, living and working in Europe was a new experience to most of them. Because they lived "on the economy" rather than in isolated enclaves, they experienced life at its fullest in a foreign country.

For Jay and Gerry Mumford, who went to Greenham Common, England, life in a foreign country was softened somewhat by the fact that they only had minor adjustments to make for language. "We quickly learned that 'boot' and 'bonnet' are the trunk and hood of a car," said Mumford.

Mumford was nearing retirement from Convair Human Resources when he decided, with his wife, Gerry, to apply for the Business Administrator position at Greenham Common. As Business Administrator, he was responsible for the entire administrative function supporting the offsite group.

The Mumfords lived in a rented, furnished house in Newbury, Berkshire, 60 miles west of London. They were the only American couple in their neighborhood. "During the two years we were in England," said Mumford, "we toured most of the British Isles by car. We were within an hour's drive of many of the famous places we knew from English literature like Stratford-on-Avon, the birthplace of Shakespeare."

Because distances are so short in Europe compared to the United States, Mumford said they could easily visit many of the European capital cities on weekend trips. They used vacation time for more extensive trips to the Soviet Union and Africa.

"Living in England gave us a constant awareness of history and family heritage," said Mumford, whose ancestors came from England. "We also enjoyed the exceptionally good relationship between the Convair team and our customer community, the U.S. Air Force, both on base and off," said Mumford. Wives of Convair employees were welcomed into the base Officers' Wives Club and several of the Convair spouses became quite active members, he said.

An Italian heritage influenced Robert T. Tuttobene, in part, to apply for assignment at Comiso Air Station in Sicily, where he and his wife, Norma, spent three years. Tuttobene was Base Manager at Comiso, and was responsible for all operations of the Convair team at the base.

The Tuttobenes found Sicilian society at first to be somewhat more formal than American society. Homes contained informal areas for family living and formal rooms where guests were entertained. "At first when we visited our landlord's family, they always opened their formal living area door, to the side of the informal entrance. It took about a year before we were invited into the informal living area. We really felt we had arrived



Castle Visit. Joanne Kowalik, who worked at Wueschheim, West Germany, and lived near Wiesbaden, views Neuschwanstein, sometimes called the "Disneyland Castle."

when we were invited to dinner and then served in the family area."

The Tuttobenes lived in a small house in Comiso called a "villino" that they rented complete with cats, chickens, dog and a large garden. They shopped at small, specialty stores for each type of grocery item they needed and sometimes joined the local citizens for the "passaggiata," a leisurely stroll around the central piazza of Comiso to socialize with friends and neighbors.

Local customs required some adjustments for Americans. "American women are not fond of stating their age," said Norma Tuttobene. "In Sicily where age is venerated and openly discussed, I had to get used to the question 'quanti anni hai,' which literally means 'how many years have you,'" she said.

"Having the opportunity to work in Sicily," said Tuttobene, "was undoubtedly the highlight of my career with General Dynamics. Norma and I were pleased with the hospitality and warmth of the Sicilian people. They made us feel very welcome and encouraged us to communicate in their language and participate in their local activities. We already have plans to exchange visits with our Sicilian friends and relatives."

Joan Fisher, an engineer at the Florennes, Belgium base, said she likes the variety of cultures and food in that country. She lives in a small town on the Meuse River called Profondeville, which is in the French-speaking portion of Belgium. "My French is good enough for shopping and eating out, which is mostly what I use it for," she said. "Because I work at the base with Americans, I don't have to speak French as much."

Fisher has seen history up close during her participation in "volksmarches" (large, organized walks) through the Belgian countryside. "I've seen Roman aqueducts, medieval castles, World War II bunkers, unusual caves and out-of-the-way spots that make me feel as if I have stepped back in time several hundreds or thousands of years. Yet these spots coexist quite easily with the modern communities that surround them," she said.

"For a single female, there have only been a few things to get used to — one, the almost automatic assumption that you are married, and the second, that you do not work full-time. But in traveling and living alone, I feel safer here than I did in the USA," Fisher said.

Fisher has been taking advantage of travel opportunities, especially last summer when members of her family visited her. The rest of her free time is spent with graduate classes she is taking through Boston University's overseas program.

Mark Buckley, a field technician at Wueschheim, West Germany, also continued his education overseas by studying for a degree in aeronautical studies at Embry Riddle University at Hahn Air Base. When he decided to apply for an overseas assignment, he had never traveled outside of California, let alone the United States.

"I was a homegrown San Diego boy," he said. "I thought Yuma, Ariz., was the end of the world."

Buckley applied for the job through Convair's Professional Enhancement Program (PEP), whose weekly bulletin lists job openings for which qualified employees may nominate themselves. "It was hard work," he said of his preparation to go to Germany. "The company puts a lot of faith in you," he said. "When you're out in the field with the Air Force, you represent the company. I took that responsibility very seriously."

Buckley's career advanced — he is now a service engineering logistic representative — as a result of furthering his education in Europe. His appreciation for life outside California also grew.

"When I came back," Buckley said, "I had a different outlook on the European political situation and a better appreciation of the role of other countries besides the United States in world events. I missed the California sun, but I'd go back to Germany to live and work tomorrow. My wife, Amy, and I made friends for life."

Joanne Kowalik also found her opportunity in the PEP bulletin. She signed up and was selected for a position at Wueschheim.

Kowalik lived alone in a village called Kleinweidelbach, about 30 minutes from Wiesbaden and 10 minutes from the Rhine River. German customs, like the quiet hours observed from 6:00 to 10:00 every evening, helped emphasize doing things with friends and family, she said, and contributed to a pace of life she found satisfying.



Barbara Johnson and Gerry Mumford, Wives of Employees at Greenham Common, England, with a Veteran of Her Majesty's Service at the World Famous Chelsea Flower Show

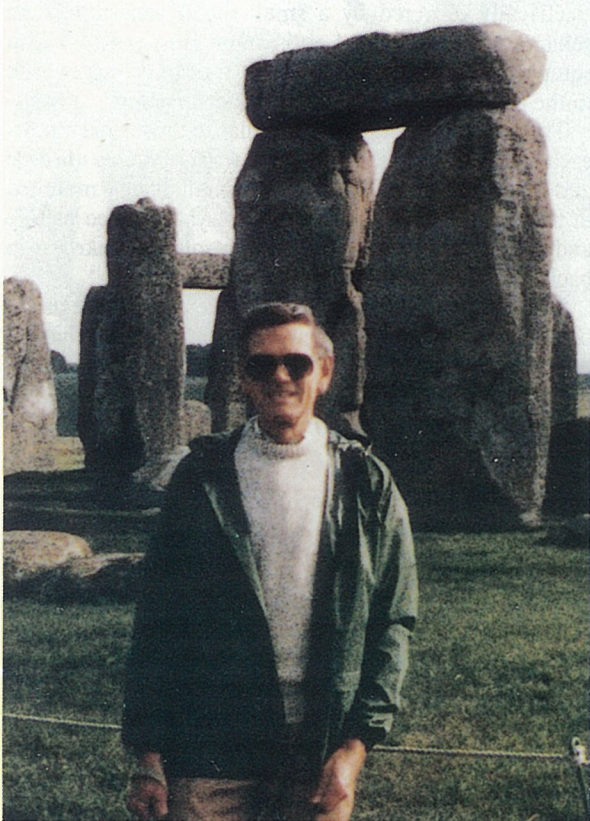
"I spent a lot of my free time on ski trips," said Kowalik. "I joined the ski club at Hahn Air Base, and took weekend trips to Switzerland and France. The major ski resorts were only hours away from where I lived."

Last summer she and her sister drove through Germany. One of the famous sights they saw was the "Disneyland Castle," or Neuschwanstein. They also visited Paris during the Tour de France, the famous bicycle race. "It was exciting to be in Paris during the race, especially since it was won by an American — Greg Lamonde."

A California native, Kowalik had to learn to drive in snow during the winter. "There is more trust among strangers in Germany," she said. "If I slid off the road, a motorist would always stop to help."

Most people who go to Europe to live and work are prepared for a certain amount of culture shock when they arrive. All overseas personnel give a great deal of credit to the cultural and language training put together by Convair's Integrated Logistic Support for their ability to easily adapt. Many of the Convair employees were surprised to find that they had just as much of an adjustment, if not more, when they came home.

Thomas I. Johnson, Base Manager at Greenham Common, described the day he and his wife, Barbara, arrived back in the United States and rented a car in Boston. For four years he had driven in England on what Americans refer to as "the wrong side of the road." When he came back, he thought he was returning to what was "normal." Instead, his first time behind the wheel he made a wrong turn in downtown Boston into the wrong lane.



Jay L. Mumford on a Sightseeing Trip to Stonehenge in England, 25 Miles from Where He Lived

Corporate Meeting To Review Divisions' Survey Action Plans

Division General Managers and corporate officers met during May to review divisionwide employee survey action plans and recommendations for corporatewide action plans.

The suggestions for corporate action made by the divisions will be presented at a meeting of corporate officers and the General Managers set for June 1st.

David Sirota, chairman of the consulting firm that assisted the company with the employee survey, will aid company officers at the meeting in focusing on the corporatewide issues identified by the divisions. Company officers will then list the issues in order of priority and develop action plans.

After the action plans have been developed, they will be reported to employees in a special issue of *General Dynamics World*.

Sue Shike, Employee Project Survey Director, said that as communications of the various action plans are published, employees will be encouraged to discuss their reactions with their managements.

"At every level," Shike said, "we are concerned that none of the key issues is lost as they move up to top management."

Shike said that business realities may postpone action on some of the lower priority items, "but our goal is to begin addressing the high priority issues immediately. We hope employees will continue to alert management if an issue hasn't been addressed or communicated."

"The ongoing communications between employees and management will continue throughout the remainder of the year as action plans are implemented," she said.

Team Approach at Pomona

At least one division, Pomona, has taken a unique approach to providing survey information and feedback by establishing two-person department "facilitation" teams. Each team is made up of one representative from Human Resource Development and one departmental member.

(Continued on Page 2)

Commercial Launch Reservations Made For Two Satellites

General Dynamics has announced that the European Telecommunications Satellite Organization (EUTELSAT) has made reservations for two Commercial Atlas/Centaurs to be launched in 1990.

The agreement calls for two single satellite launches of second-generation EUTELSAT II communications satellites, with the first scheduled in the first quarter of 1990. EUTELSAT is an international organization operating under an intergovernmental convention to which all European States can accede. The 26-member organization is headquartered in Paris.

The Commercial Atlas/Centaur launch vehicle configuration would include a four-meter fairing being developed by the Space Systems Division to accommodate the EUTELSAT spacecraft. The two communications satellites would be launched from Cape Canaveral, Fla., by an experienced Space Systems Division launch team.

Last month, the National Aeronautics and Space Administration signed the first U.S. Government agreement transferring authority to General Dynamics to use NASA-controlled facilities and capabilities for commercial manufacture and launch of the Atlas/Centaur.

General Dynamics is fully committed to the Commercial Atlas/Centaur program. The company has placed multiyear orders with suppliers to support launchings of

(Continued on Page 2)

Chairman Pace Tells Company Shareholders That Cost-Competitiveness Will Be Improved

Speaking at the annual meeting of shareholders May 7th in San Diego, Chairman Stanley C. Pace said that the company is preparing to "move ahead with a firm focus and a sense of purpose" in a defense industry environment pervaded by increasing cost-competitiveness.

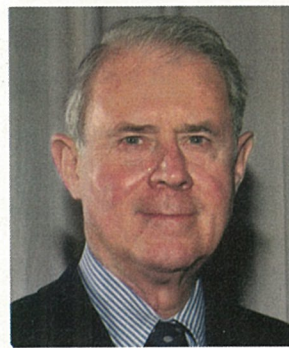
"In order to achieve a level of cost-competitiveness as excellent as our technical performance, we have initiated a corporatewide program to identify and implement measures that will significantly improve our competitiveness," Pace said. "I am confident that our employees will give these efforts the same enthusiastic support they gave the implementation of our administrative action programs in 1986."

Pace pointed out that, given the current thrust to reduce nuclear weapons, General Dynamics' "broad expertise and programs in conventional weapons position (the company) extremely well for growth in the conventional weapons business in the event the desired reduction of nuclear weapons occurs."

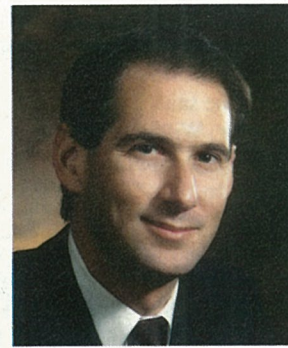
Cyrus R. Vance and James S. Crown were elected at the meeting to the Board of Directors of the corporation.

Vance, former Secretary of State during the Carter Administration, is presiding partner of Simpson Thacher and Bartlett, a New York law firm. Crown, a general partner with the Chicago-based Henry Crown and Company, is the son of Lester Crown, Executive Vice President of General Dynamics and a member of the board since 1974.

General Dynamics announced on Apr. 22nd that net earnings for the first quarter of 1987 rose to \$105.4 million from \$70.1 million a year ago, and earnings per share increased to \$2.45 from \$1.64 for the same period in 1986.



Vance



Crown

Sales increased to \$2.3 billion, up 11 percent from the \$2.0 billion reported for the first quarter in 1986. Funded backlog at the end of the 1987 first quarter was \$15.7 billion, and the total backlog (funded and unfunded) reached \$21.7 billion. Comparable amounts at the same time last year were \$17.0 billion and \$23.5 billion.

"The turnaround in our General Aviation business, which posted \$2.9 million in earnings from operations compared to a loss of \$29.6 million a year ago, is a major factor for the excellent improvement in the company's performance in the first quarter of 1987," Pace said. "This turnaround is due to last year's restructuring and cost reduction actions at Cessna Aircraft."

"Also of great significance was the improvement in Government Aerospace," Pace said. "General Dynamics' largest line of business, Military Aircraft, continued to make the greatest contribution to the company's growth

(Continued on Page 3)



F-16N Navy Adversary Aircraft on Test Flight near Fort Worth

Company and Naval Air Renew Relationship Through F-16N Adversary Aircraft Program

The U.S. Navy began a new era in its air combat training capability with a recent ceremony at Miramar Naval Air Station, Calif., marking the arrival of the first F-16N adversary fighter at the base.

Rear Adm. A. S. Newman, Commander of the Fighter Airborne Early Warning Wing, U.S. Pacific Fleet, welcomed the first of 26 F-16Ns that Navy instructor pilots will fly against fleet aircrews in realistic air combat scenarios. The F-16N will be flown by two units at Miramar — the Navy Fighter Weapons School, known as "Top Gun," and VF-126, the Pacific Fleet adversary squadron. It also will be flown by VF-45, the Atlantic Fleet adversary squadron, at Key West NAS, Fla.

Admiral Newman referred to the F-16 as "probably the world's best one vs. one fighter" in his remarks at the ceremony. Equipping adversary pilots with the F-16N is "a big step to ensure that Naval aviators receive the absolute best air combat maneuvering training that we can possibly give them," he said.

"The F-16 has proven itself in over seven years of operational service," Admiral Newman said. "It has set new standards in performance, operability and reliability, and low operating costs. Today's addition of this airplane . . .

allows us to simulate the very latest enemy threat."

The admiral said he wanted to thank General Dynamics for producing the F-16N, as well as "those in the Navy who had the foresight to procure it."

Cmdr. Frederic G. "Rick" Ludwig, the commanding officer of the Top Gun school, also participated in the ceremony. Commander Ludwig noted that he and the school's other instructor pilots are excited about the idea of flying a new aircraft that will increase their training capabilities.

The Navy's older adversary aircraft, the F-5 and A-4, have no radar and are not comparable to the generation of threat aircraft that is currently being flown, according to Commander Ludwig. "This is a quantum leap in the Navy's ability to train its own. It's an aircraft that finally will be able to simulate the 'fourth-generation' threat that is out there today, and give us the ability to more than adequately train our Navy and Marine Corps fighter and strike-fighter aircrews."

"If they (graduate-level student pilots) can hold their own against the F-16, when they encounter the Fulcrum,

(Continued on Page 2)

Company and Naval Air Renew Relationship

(Continued from Page 1)

the Flanker and the Foxhound (Soviet-built fighters) in the real world, they should be able to do well against them," he said.

Cmdr. William J. Butterworth, commanding officer of VF-126, said pilots will find the F-16N to be "a tough aircraft to beat," but one that will allow them to "train like we're going to have to fight."

Herbert F. Rogers, Executive Vice President-Aerospace, represented General Dynamics at the ceremony. "The F-16N program has provided an opportunity to re-establish the very old relationship that General Dynamics and Convair have had with Naval Air," Rogers said, explaining that the last Navy airplane produced by General Dynamics and its predecessor companies was the Consolidated PBV, in the 1940s. "General Dynamics is proud to be a partner with the Navy on the F-16N program," Rogers said.

"The Navy F-18 and the Air Force F-16 have proven themselves as the best multirole fighters in the world, as air-to-air and air-to-ground fighters. Today the F-16 takes

on a new dimension, that of the supersonic trainer in the adversary role," Rogers said.

James R. Mellor, Executive Vice President-Marine, Land Systems and International, and several other representatives of Corporate Office, Fort Worth and Convair also attended the ceremony. NAS Miramar is situated just north of San Diego.

Commander Ludwig, Commander Butterworth and several other Navy adversary pilots have already received F-16 training at Luke AFB, Ariz., and at Fort Worth. They are scheduled to begin flying the F-16N against fleet pilots in Top Gun courses about mid-summer.

The F-16N is a modified version of the basic F-16C, with the 20 mm gun removed and the F-16C/D's APG-68 radar replaced with the Westinghouse APG-66 radar, currently used in F-16A/B aircraft. The F-16N is powered by the General Electric F110 engine.

General Dynamics will provide complete maintenance for the F-16Ns at their two Navy operating bases. General Electric personnel will provide engine maintenance under subcontract to General Dynamics.



F-16N Arrival Ceremony. Rear Adm. A.S. Newman speaks at the Navy's F-16N arrival ceremony, held in an F-14 hangar at NAS Miramar, Calif. Seated on stage, (left to right) are Cmdr. Rick Ludwig; Herbert F. Rogers, Executive Vice President-Aerospace; Capt. D.C. Hathaway, chaplain who offered the benediction; and Cmdr. William J. Butterworth.

Pomona Uses Team Approach in Feedback

(Continued from Page 1)

"This has proven to be a most successful way for us to promote effective survey feedback and action planning," said Naomi Morales, Pomona Survey Coordinator.

The role of team members, Morales said, "is to be responsible for the training, coaching and support of department management in the data feedback and action planning processes."

"We have found that the team approach broadens the division's resources and responses," Morales said. "The teams have done a great deal of sharing and learning with each representative bringing his or her own skills and insights to the team effort."

Bud W. Boyd, Project Administrator for Facilities Management and Plant Engineering, served as facilitator for his department of more than 400 employees and was initially skeptical about the survey because of an unsatisfactory experience at another company.

Now, Boyd said, he already has seen positive results of the survey. "I'm glad I didn't miss the opportunity. I think things are really starting to pull together now," he said. "The significance of the survey is the excitement created among employees who look forward to change."

Another department team member was Christine G. Thurston, Labor Relations Representative for the Human Resources Department of about 500 employees.

Teaming worked very well at Pomona, in her opinion,

because there was plenty of give and take between members.

"In a good feedback session, people are being candid; they are telling you their true feelings about troublesome problems. You listen to every word," Thurston said.

Judith A. Conn, a training administrator, functioned as a consultant and facilitator for the 600-employee Material Acquisition Department.

She said that the teaming approach "was extremely effective, particularly because of the support, follow-through and leadership of the department."

Her biggest hope is that the survey and feedback are not seen by employees as a one-shot thing, she said. "It's an ongoing process to make changes resulting from survey feedback."

Arthur H. Howard, Training Development Administrator, said, "It's a real credit to division leadership to engage in the survey and then follow through with results. We have a unique opportunity to get people involved in solving problems."

Now that all the data has been gathered from the survey results, Howard said, the next step is to take action and "to tell employees what is being done. We have identified the symptoms, now we need to change the root cause."

Howard was assigned to the Production Department (1,700 employees) and the Program Development Department (35 employees) and was teamed with representatives of those departments.

Management Club Boosts Special Olympics in Ohio

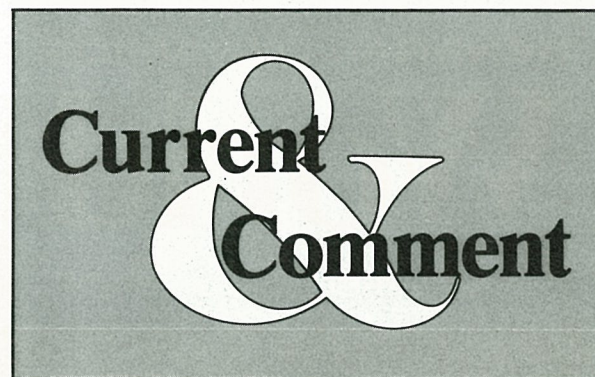
The Land Systems Management Club recently presented a \$2,500 check to the Allen County (Ohio) Special Olympics.

Edward J. Horn, Youth Director for the Management Club, presented a check to Jeffrey D. Vermillion, West Section Coordinator for the Special Olympics, and Robert E. Mayo, a tool engineer in Manufacturing Development and Support and Activities Director for the Allen County

Special Olympics.

Mayo said that more than 50 Lima Tank Plant employees and their families provided help and support for the 500 participants in the Ohio zone Special Olympics competition held Apr. 25th.

Local Union 2075 also contributed \$500 and provided volunteer help for the event.



(Observations on news of interest to the company and the industry will appear regularly in this column.)

THE MRP STORY - Recent publicized government concerns with defense contractor computerized inventory systems — known as Manufacturing Requirements Planning (MRP) systems — should be put into proper perspective.

At General Dynamics, we have a number of such systems, some more advanced than others.

Simplistically stated, an MRP system allows parts with identical specifications to be commonly stored and assigned to different contracts as the need arises. Material already received for one contract is "borrowed" for use on a second contract and is later "paid back." This results in tightly controlled inventories and produces considerable efficiencies in cost and scheduling.

Government concerns focus on possible cost differences between the material "borrowed" and the material "paid back," as well as differences in customers and the status and types of contracts involved.

However, since the borrowing and repayment of parts between contracts are based on day-to-day need and availability (as determined by the MRP system), the process is clearly a "random" event. Statistically, such events tend to balance out. Consequently, it is far from certain — as has been alleged — that any overcharging has ever occurred.

The demonstrated advantages of the MRP system must be carefully weighed against the unproven concerns recently raised. There is no quick fix to bring these systems into compliance with the proposed narrow interpretations of regulatory language. Current proposed solutions, in fact, appear to be so time-consuming and costly as to negate the kinds and levels of efficiency gains that have been realized up to now through MRP.

Improved use of manufacturing inventories is one of a number of areas in which General Dynamics has been working closely with the Defense Department. We anticipate submitting a preliminary plan later in the year to address their concerns.

* * *

HIGH-YIELD INVESTMENT - General Dynamics' \$500,000 gift to Tuskegee University's new Aerospace Science and Health Education Center, named after the late USAF General Daniel "Chappie" James, was topped only by outlays from the U.S. Congress (\$9 million) and the State of Alabama (\$3.2 million).

Standley H. Hoch, Executive Vice President-Finance, and John P. Maguire, Corporate Vice President and Secretary, represented the company at the new building's May 10th dedication ceremony in which President Reagan participated. The university's aerospace engineering program is the only one of its kind at a historically black U.S. institution of learning.

* * *

NO SURPRISE - The U.S. aerospace industry recorded exports of \$19.7 billion and imports of \$7.9 billion in 1986. That's a net positive trade balance of \$11.8 billion. The good news was that exports, 5 percent higher than 1985, reached a record level. The bad news was that imports also set a new high — jumping 29 percent over a year earlier.

Launch Reservations

(Continued from Page 1)

commercial Atlas/Centaurs beginning in mid-1989. All facilities, services and arrangements required for spacecraft processing and launch will be provided by General Dynamics under a single launch services contract.

The experienced General Dynamics Commercial Atlas/Centaur team is made up of Pratt & Whitney Division of United Technologies Corporation, manufacturers of the Centaur engines; Rocketdyne Division of Rockwell International, manufacturers of the Atlas engines; and Honeywell and Teledyne, manufacturers of the Centaur avionics equipment.

The EUTELSAT launch reservations are the most recent of several reservations received by General Dynamics for the Atlas/Centaur launch vehicle.

Interview with President O. C. Boileau

Competitiveness and Cost Reduction — What Do They Mean?

Ever since President Reagan's 1987 State of the Union Message took up the theme of competitiveness, it has received considerable publicity. In this Question and Answer session, General Dynamics President Oliver C. Boileau outlines how corporatewide efforts in this area may affect employees.

Q. What motivated this increased emphasis on competitiveness and cost reduction?

A. Over the past five years, the government has been re-evaluating the entire procurement process. As a result of the subsequent changes brought about by this re-evaluation, contractors have been asked to absorb greater risks while, at the same time reducing their ability to cope with the new risks. For example, we are required to invest significant funds in major development contracts, to provide much of the special testing equipment and to price spare parts on intrinsic value without consideration of their real cost. In addition, progress payments are being reduced, requiring the company to fund more of the program without allowing the company to recover interest on the borrowed money. The amount of government funding for independent research and development is also being reduced, requiring even greater funding by the company. Also, one of our major competitors has announced its intention to reduce costs by 40 percent and has already begun implementing major elements of that program.

Q. Does the increased emphasis on cost reduction mean that there will be massive layoffs?

A. Our objective is to avoid layoffs to the greatest extent feasible. Our ability to meet this objective depends

on our success in reducing other costs. The key is to be disciplined and start early. If we do a good job of anticipating employee turnover, training our employees and re-evaluating our organizational structure, we hope to be able to avoid layoffs.

Q. How will this effort affect compensation?

A. Salaries, wages and benefits are a cost. In order for us to compete effectively, our overall costs should be comparable to or less than those of our competition.

There are many ways to go about this. We do it through our productivity initiatives, through our staffing and manpower efforts to make certain that we have the right number of people for the job that must be done, through installation of new systems to improve first-time quality and avoid rework, through management of overhead expenses and support activities and through continual management of compensation and benefit costs.

Q. What do you say to the people who say how much harder they are already working, or how much their department is already understaffed?

A. Traditionally, our people have responded well in picking up the slack caused by hard times. For its part, the company has not been good in the past at identifying those tasks which can be eliminated altogether. For example, I'm personally convinced that a large part of all reporting that we do in this company could fall into the category of "nice to have but not mandatory." These reports are often difficult to eliminate because they have been published for so many years, or represent someone's "favorite" report. But many can be eliminated. A good example of this is our company's annual Operating Plan. For the 1987 Operating Plan we decided to significantly reduce the number of required data forms, and we achieved a reduction of nearly 50 percent. Can you imagine the savings we could realize if we could eliminate an equivalent amount of all our reporting?



President Boileau



Caught in a Sunburst. A General Dynamics/USAF F-16C is showered with rays from a burst of the sun in this photo taken over North Texas by Fort Worth photographer Nick Alvarado.

USMC Seeks Deep-Water Fording for M1A1

The U.S. Marine Corps has issued a Request For Proposal to Land Systems for development of an M1A1 kit for deep-water fording.

Development of the fording kit is the first step leading to production and delivery of the M1A1 to the Marine Corps in October 1989. Current projections call for delivery of 550 tanks with Block II improvements.

In 1984, Land Systems fabricated and demonstrated the feasibility of the fording kit. Trials at the Army's Tank and Automotive Command and in the surf at Little Creek, Va., confirmed the concept.

The Request For Proposal will culminate in an award to Land Systems of an 18-month contract to develop and test a production configuration of the fording kit. Also anticipated are development of support concepts and technical manuals. When development is completed, the Marine Corps currently plans to award a competitive contract for production of 50 kits, sufficient for the first

USMC M1A1 battalion.

The Marine Corps has several other unique M1A1 requirements in addition to the water-fording capability. The Marine Corps requires close coordination between tanks and dismounted infantry. Therefore, an external tank-infantry telephone will be developed for the M1A1. Land Systems anticipates obtaining the contract for this effort.

Coincident with the tank-infantry telephone development effort will be the requirement to study and resolve M1A1 shipboard tiedown requirements essential to tactical landing operations. Provisions for Marine Corps tactical radio sets and communication security items will also be addressed.

These efforts are scheduled to culminate in a unique M1A1 technical data package in mid-1988 in time to procure long-lead production material for initial tank deliveries in late 1989.

Chairman Pace Says Cost-Competitiveness Will Be Improved

(Continued from Page 1)

in the first quarter. Earnings in this segment were up despite development costs for certain advanced aircraft designs. Our Missiles, Space and Electronic Systems businesses, led by Pomona, also registered substantial gains.

"The results at our Submarine operations were adversely affected by lower volume on the Trident program resulting from a directed one year schedule delay to incorporate the new Trident missiles," Pace said. "In addition, the operating margins of the SSN 688 program reflect uncertainties related to the installation of a newly designed combat system."

"Proposals to recover the costs created by this combat system installation will be submitted to the Navy in the near future," Pace said. "The performance at Land Systems reflects the continuing impact of a 1986 delay in the M1A1 production program due to engineering changes in the tank's ammunition door. We are pleased at the excellent production acceleration which Land Systems is achieving, particularly the record monthly delivery of 114 M1A1s in March of this year."

In addition to the improved performance from operations, the company's accounting method for deferred taxes required the recognition of \$20 million, or 46 cents per share, as a result of the changes in the tax rate.

Pace also reported these significant developments for the company in the past three months:

- Bahrain became the 16th country, and the first of the Gulf States, to order the Fort Worth-built F-16. Bahrain plans to acquire 12 F-16C/D aircraft, with the first delivery to take place in 1990.

- U.S. Navy test firings of Valley Systems' Rolling Airframe Missile (RAM) resulted in 11 successful intercepts out of 13 launches. Approval for limited production of this high-firepower weapon system, designed to provide antiship missile defense, is expected by mid-1987.

- NASA signed an agreement with Space Systems with regard to the company's commercial operation of the Atlas/Centaur launch vehicle. The agreement, the first of its kind with private industry, will permit Space Systems to use Atlas and Centaur launch facilities at Cape Canaveral, Fla., to provide checkout and launching services for commercial Atlas/Centaur customers.

Company Distributing Copies of Constitution During Bond Campaign

Campaign organizers for the U.S. Savings Bond drive throughout the company will be distributing pocket-size copies of the U.S. Constitution as an adjunct to the drive.

Since the dates of the Savings Bond campaigns vary at the divisions and subsidiaries, all of the booklets will be distributed at different times. However, the distribution to every employee will be completed by Sept. 17th, the 200th anniversary of the signing of the Constitution.

Chuck DeMund, Corporate Director of Advertising and Promotion and this year's corporate U.S. Savings Bond campaign director, said the idea of distributing the copies goes back to a dinner party in late 1986 attended by Warren E. Burger, former U.S. Supreme Court Chief Justice and current Chairman of the Commission on the Bicentennial of the U.S. Constitution.

At the party, Burger asked the president of a large food company in mock seriousness why it did not put a copy of the Constitution into every box of its breakfast food.

"This anecdote appeared in *The New York Times*," DeMund said. "It was reported that Burger wanted to flood the country with more than 50 million copies of the Constitution, and it appeared to us that General Dynamics could help in this effort."

"Since each employee was to be given a sign-up card and other materials in connection with the Savings Bond drive, the mechanism was already in place to distribute the copies of the Constitution to our more than 105,000 people," DeMund said. "It also appeared that reminding employees of the national values defined in the document would provide an inspirational civics lesson that might encourage employee investment in their country through Savings Bond purchases."

Permission was obtained from the Bicentennial Commission to print the pocket-size Constitutions.

Valley Systems Cited For Zero Deviations In Stinger Program

Valley Systems' Stinger missile has become the first major production program at a General Dynamics defense division to attain the important goal of zero deviations and waivers.

The Valley Systems Division recently was awarded a corporate excellence award for the achievement. The award was accepted by John E. McSweeney, Division General Manager, and James G. Park, Vice President-Product Assurance.

Throughout General Dynamics, every effort is made to deliver products which conform exactly to the customer technical data package. Occasionally, deviations and waivers are granted by the customer to allow use of material that deviates from contractual requirements, with an undesirable potential for less than top quality material and increased cost to General Dynamics.

In 1986, B. Edward Ewing, Corporate Vice President of Operations and Production Engineering, issued a challenge to all divisions to eliminate all deviations and waivers.

A division deviation and waiver reduction program was developed at Valley Systems under Park's leadership.

"Elimination of deviations and waivers has always been our unwritten goal," Park said, "but this challenge provided an added incentive and helped us focus our attention on their elimination."



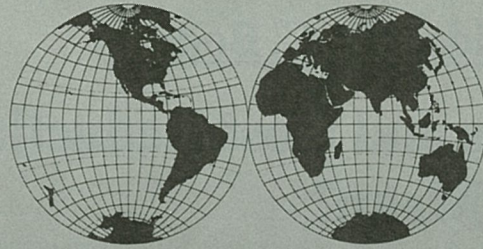
Award Received. James G. Park, Valley Systems Vice President-Product Assurance (left), and John E. McSweeney, Division General Manager, display the corporate excellence award presented to the division for achieving and maintaining zero waivers and deviations on the Stinger production program.

The effort at Valley Systems was kicked off by Frank O. Chesus, Division General Manager at the time, with the issuance of a division Standard Practice establishing deviation and waiver responsibility at the program director level. This new policy required the establishment of aggressive action to minimize the number of deviations and waivers associated with delivered products. The policy also was extended, as a goal, to include the elimination of all waivers and deviations for all production programs.

Park said that Valley Systems' new deviation and waiver reduction program includes guidelines more stringent than those applied previously. Now, all requests to deviate from engineering documentation require complete supporting justification and a detailed plan for future closure of the requested deviation or waiver.

At Valley Systems, a special team was formed to track, follow up and provide status on the closure plan action items of all open deviations and waivers. The team included Alexander V. Takacs, Manager of Configuration and Data Management-Stinger Program Office; Carol L. Knowles, Procurement Program Administrator; Paul W. Comings, Quality Assurance Project Administrator; Paul H. Matter, Chief-Manufacturing Control; and Ray D. Gunn, Project Administrator-Stinger Production.

This concentrated attention paid off, and today Valley Systems continues to achieve the zero deviations and waivers goal on the Stinger production program.



Around the World

CHQ: Stanley G. Schroeder has been appointed to Corporate Director-Retirement Plans and Human Resources Counsel... Keith Q. Murray transferred from Space Systems and was promoted to Supervising Senior Auditor... Rex M. Potter transferred from Fort Worth and was promoted to Corporate Pricing Specialist... Linton C. Davis transferred from Fort Worth and has been promoted to Senior Subcontract Auditor... Dana A. Marshall transferred from AMSEA and has been promoted to Corporate Manager-Business Planning... Lawrence G. Fournier was promoted to Corporate Marketing Manager-Korea & Taiwan... Mary E. Johnson to Corporate Fort Knox Representative/Level I.

Fort Worth: Jerry L. Parris was appointed to Program Director... Donald P. Atchison was promoted to Project Engineer... Bobby J. Blevins, Van A. Bonin and Kenneth W. Gardner to Manufacturing Control Supervisor... Ronald Brown to Program Specialist... Mical D. Burchfield to Tool Design Supervisor... Dennis K. Bush to Manufacturing Control General Supervisor... Kenneth L. Crawford to Foreman... Bill R. Davis to Inspection Supervisor... Kenneth L. Dean to Purchasing Agent... John E. Dillman, Bennette B. Fruge Jr., John N. McKinney and James G. Palmer to Lead Engineer... Claire J. Evans, David C. Fulkerson, Thomas W. Ryan, Donald W. Saint and Larry V. Webb to Engineering Chief... Richard A. Fisher to Senior Tool Engineer... Walter E. Fisher to Assistant Project Engineer... Terry W. Gentry to Human Resources Supervisor... Marshall T. Kusumoto to Subcontract Management Coordinator... Ronald T. McBride to Project Manager... Robert F. Montgomery to Senior Program Analyst... Janis E. Parker to Configuration Control Specialist... Jim C. Pope to Manufacturing Engineering Chief... Alfred O. Roebuck and James S. Wells to General Foreman... Johnnie F. Storm to Superintendent... Sarah M. Suarez to Logistics Group Supervisor... Kenneth F. Taylor to Engineering Manager... Jack L. Twedell Jr. to Logistics-Support Administration Chief... Lonnie L. Vance to Human Resources Chief... James W. Vaughn to Logistics Supervisor... Gregorio Zertuche to Process Planning Specialist.

Convair: Richard J. Slowey was appointed to Corporate Director-Far East/South America... Robert J. Barry has been promoted to Operations Administration Chief... Walter J. Blackson and Harold C. Nelander to Program Manager... Alberta J. Danish to Manufacturing Engineering Operations General Supervisor... Alton T. Davis to Manufacturing Control Operations Supervisor... Andrew D. Falken to Operations Manager... Fred M. Hadaway to Material Operations Supervisor... Angelito Y. Suarez to Group Engineer... Danny Silver to Plant Protection Lieutenant... Halfred M. Hofherr to Assistant General Counsel, Convair and Space Systems.

Space Systems: Marianne M. Andres was promoted to Configuration Management Senior Specialist... Michael M. Busley and John M. Lowe to Facilities Planning Operations Supervisor... Robert A. Coker to Quality Assurance Project Engineer... Richard E. Dubel, James A. Nugent and Carl I. Wannamaker to Quality Assurance Group Engineer... Leroy H. Gross and James L. Kettring to Engineering Specialist... John D. Huddleston to Material Operations Supervisor... Gary C. Rowe to Plant Services Chief... David W. Stein and Joe W. Streetman to Project Engineer Chief.

Land Systems: James P. Illsley was promoted to Production Control Manager... Steven H. Sclawy to Contract Administrator... Kenneth M. Swartz to Group Engineer... Walter W. Pudyk to Document Control Supervisor... Roger K. Waid to Engineering Program Chief... Douglas A. Sadders to Material Control Chief... Douglas S. Field to Material Planning and Control Chief... Michael E. Adelson to Senior Subcontract Representative... Kenneth M. Dumais to Guard Sergeant... Nathan G. Jamerson and Robert C. Turner to General Foreman... Kevin P. Bruin to Plant Engineering Supervisor... Thomas E. Sils to Senior Offset Administrator... Robert J. Fey to Assistant Program Manager... Eric W. Locke, Harry A. Briggs and Richard J. Deleck Jr. to Engineering Chief... Steven A. Diebold and John Hall Jr. to Engineering Supervisor... James P. Ballinger to Quality Assurance Specialist.

Electric Boat: Thomas Sullivan and Robert A. Bull were promoted to Ship Manager... John Donahue to Nuclear Construction Project Manager... John T. Latham to Human Resources Administration Manager... Robert Renza to Radiological Control Manager... Robert Scheel to Quality Manager... Robert J. Smith, Shelton Harwell and Michael W. Crimmins to 2nd Shift Operations Superintendent... Douglas L. Lafleur to Shift Superintendent... Paul Brown and Robert A. Chapman to Engineering Chief... John P. Letz to Material Planning Chief... David Halbach to Equipment Control Center Supervisor... Allan B. Hale to Engineering Supervisor... Linda P. Lathrop to Word Processing Supervisor... James Welch and Carlton Smith to Design Supervisor... Carlos Ayala, Wayne C. Bailey, Thomas Barbone, Raymond Bartoszek, John Cluny, William Frongillo, John G. Gates, Kirk M. Green, John Griffin, Chris Howard, John F. Jackson, Kendall A. Janus, John Kam, Richard Kobor, Robert Matrone, Joy L. Mauro, Andrew Michaud, Bruce R. Munson, Sara J. Neumann, Laura Schattgen, David Smith and Thomas B. Stuckey to Foreman... John Lariviere, Earl M. Thomas and Robert J. Urbani to General Foreman... Robert F. Avery to Administration Control Coordinator. At Quonset Point, Richard Armstrong, William Evers and Robert Persson to Foreman II... Brett Cicchese and Kevin Rocha to Foreman III... Jorey Kauffman and Robert Quattrucci to Group Trade Planner... George E. Mapes to Property Control Administrator. At Kesselring Site, Dennis Urta to Site Superintendent... John D. Yates to Assistant Superintendent... Louis Tirelli, Edward B. Perry and Timothy E. Connolly to Engineering Site Chief... Richard D. Long to Planning Site Chief... Robert Macaioni to Inspection Chief... George M. Malia to Reactor Services Chief... Joseph Sisco to Contract Administration Chief... Earl Smith to Accounting Site Chief... Robert L. Voyer to Material Ordering Site Chief... Wade Sikora to Industrial Hygiene and Safety Supervisor... Michael J. Havican and Raymond Melancon to Radiological Control Foreman... Theodore C. Hurlock to Purchasing Agent. At Naval Reactor Facility (A1W), Matthew R. Bourne to Radiological Control Foreman. At Avenel, F. Missel to Engineering Test Operator. At Charleston, Gary S. Heinly to Welding Engineering Supervisor.

Pomona: Floyd Constant was appointed to Marketing Director... Oscar Arroyo was promoted to Section Head... Jeannie M. Bellefontaine to Material Liaison Representative... Robert O. Bircher to Standard Missile Program Manager... Shu P. Chan, Vincent S. Dea, Stanley R. Kendall, Bruce K. Miller and James G. Quam to Group Engineer... Evelyn C. Collins to Engineering Planning Specialist... Charles E. Dube to Senior Plans & Analysis Staff Analyst... Mary L. Dunning to Human Resources Representative... Robert L. Easley to Project Engineer... Thomas W. Fisher to Manufacturing Group Engineer... Dennis E. Gary to Production Control Representative... Michael D. Grayson to Assistant Project Engineer... Anthony D. King to Engineering Specialist... James L. Miller to Production Control Administrator... Naomi A. Morales to Development/Training Administrator... Dale W. Porter to Superintendent... Fausto A. Recalde to Senior Electronics Engineer... Stephen B. Spires to Senior Project Engineer... Susan R. Stranak to Training Specialist... Ilsebill C. Wolfe to Management Systems Specialist... Kenneth D. Calahan to Configuration and Data Management Representative... Albert T. Cole Jr. to Design Engineer... Michael W. Hudekoff to Cost Control Administrator... Darrell L. Springer to Quality Assurance Engineer. At Camden, Nonie K. Green, Judy M. Watson and Sharon C. Watson to Programmer Analyst.

Valley Systems: Bryan E. Koetting was promoted to Accounting Chief... James W. Enos to Quality Assurance Project Administrator... David E. Freeman, Thomas J. Rose and David G. Hardesty to Group Engineer.

Data Systems: At Headquarters, Richard A. Smith was appointed to Corporatewide Applications Director. At Western Center, Richard A. Gaeta, William Cherry and Samuel T. Wong were promoted to Software Engineering Chief... Dennis Marck to Production Control Chief... Heidi M. Trost to Product Software & Engineering Systems Manager... Mark D. Roesch to Software Engineer... Bill A. Maddox to Project Engineering Manager. At Central Center, Charles R. Stall II to Facilities Chief... Jean C. Hadley and James G. King to Business Systems Development Chief... Carl F. Orton to Engineer Software Supervisor.

GDSC: Rodger D. Adkinson was promoted to Program Contracts/Procurement/Human Resources Manager... Mary C. Linder to Personnel Administration Manager... Vernon L. Solberg to Computer Systems Specialist.

GENERAL DYNAMICS

World

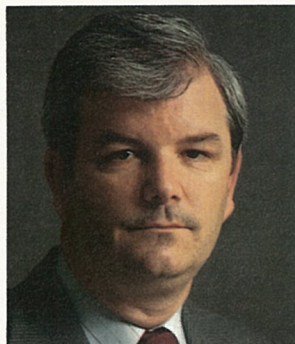
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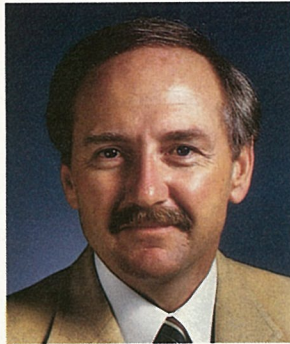
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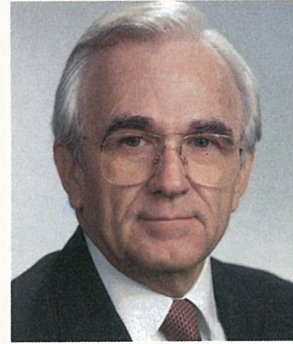
Wynne



Grimes



Palda



Babcock



Straeter

Promotions to Vice President Are Announced Throughout the Company

Promotions to Vice President have been announced by the Land Systems Division, Corporate Office, Material Service Corporation, and the Convair and Electronics divisions.

John R. Canar has been named Vice President, Contracts and Estimating at Land Systems. He replaced **Michael W. Wynne**, who was named Land Systems' Vice President of Marketing.

Canar is responsible for all contract administration, including negotiations, estimating and proposal development. He brings almost 30 years of defense-related experience in procurement, engineering administration and contract administration to his new assignment. At Land Systems, he has served as Director of Estimating and most recently as Director of Contracts. He received a doctorate from the University of Detroit in 1955.

Wynne is responsible for the domestic and international marketing of all Land Systems products and services and for the division's business planning and analysis. Before joining the division in April 1982, he served at Fort Worth and in the Corporate Office, including an assignment as Corporate Manager of Proposal Analysis and Pricing. A 1966 graduate of the U.S. Military Academy, he holds a Master of Science degree in Electrical Engineering from the Air Force Institute of Technology and a Master of Science degree in Business Administration from the University of Colorado.

John W. Grimes has been appointed to the newly created position of Managing Director-Greek Development Company and Vice President-General Dynamics International Corporation. He will be responsible for directing and coordinating the activities of the Hellenic Business Development Company, A.E., which has been formed to develop and implement offset business projects for Greece. The objective of this foreign subsidiary company is to provide substantial near- and long-term direct benefits to the Hellenic industry, economy and balance of payments. He joined General Dynamics in 1963 and has served in material and procurement positions. In 1980, he was appointed Director, International Offset-Europe. Grimes holds a Bachelor of Science degree in Business Administration and Industrial Relations and a Master of Business Administration degree from Texas Christian University.

John Palda has been appointed to the newly created position of Senior Vice President of Administration for Material Service Corporation. He will be responsible for the Finance, Human Resources and Purchasing departments. Palda had been Vice President of Continental Cement Company, St. Louis, since 1985 and previously was President of Shiely Concrete Materials Company, Minneapolis, Minn., from 1977 to 1985. He received a Bachelor of Arts degree in Business and a Master of Business Administration degree from the College of St. Thomas, St. Paul, Minn.

Russell N. Babcock has been appointed Division Vice President-Procurement at Convair, with responsibility for the procurement of materials and services to support all division programs. He began his career with General Dynamics in 1955 in the Astronautics Division Procurement Department working on the Atlas program. He held management positions throughout the material and procurement functions. In 1978, he was promoted to Director of Procurement in the Convair Division. He earned a Bachelor of Arts degree in Psychology from the University of Illinois in 1952.

Terry A. Straeter has been appointed Division Vice President and Assistant General Manager at the Electronics Division. He joined General Dynamics in 1979 as Director of Technical Software at Data Systems Services. He was appointed Director of Data Systems Division-Western Center in 1982 and Division Vice President in 1983. He transferred to Electronics Division in 1983 as Division Vice President and Program Director for Tactical Systems. He continues to be responsible for the Tactical Systems programs at Electronics. Straeter was a research mathematician at NASA's Langley Research Center from 1967 to 1979. He received a Bachelor of Arts degree in Mathematics from William Jewell College in 1964, a Master of Arts degree in Mathematics from the College of William and Mary in 1966 and a doctorate in mathematics from North Carolina State University in 1971.

Ethics Awareness Training Provides Leadership Experience By Joe Stout

General Dynamics' Ethics Awareness training program has proved to be a valuable employee development tool, as a side benefit to its principal purpose of ensuring that each company employee has a heightened awareness of issues related to business ethics and conduct.

At Fort Worth, for example, more than 60 professional and supervisory employees were recruited to serve as ethics workshop facilitators, giving them a leadership experience that many have described as educational and enlightening.

As facilitators, the employees received special instruction in the communications and human relations skills needed to make the workshops effective. They then had many opportunities to apply the skills while leading ethics workshops for the rest of the division's 24,000 employees.

The initial workshops, for upper management, were led by "master trainers" from Management Development, Production Quality Circle Program Office and Engineering Personnel Services. These trainers then prepared the cadre of departmental and volunteer facilitators.

"In training the facilitators, we spent time on speaking skills and presentation skills such as controlling voice volume, handling questions and the mechanics of using visual aids," said Barbara L. Stangl, Human Resources Representative in Management Development. "Some of the facilitators already had these skills, of course. For those people, it was a chance for further development," she said.

"Many of the facilitators were concerned about their ability to deal with the strong feelings that they expected some employees to have about the subject of ethics," Stangl said. "We introduced the facilitators to methods for reflecting their clear understanding of another person's feelings, for use in cases where workshop discussions become heated. This parallels what we teach in our Interpersonal Skills classes. We also gave them tips on how to direct and stimulate discussion."

The training was very effective because of the practical application that followed it, according to Stangl. "We encouraged each facilitator to lead at least six workshops, to get the full benefit of the experience," she said.

David D. Buttgen, a Senior Design Engineer in the Engineering Liaison group, led 38 workshops for employees in the Engineering, Tooling and Special Projects departments. Buttgen is the Training Coordinator for his group. "I wanted to be a facilitator because I knew I could benefit from more experience in leading presentations," he said. "Being a facilitator did me a lot of good. I'm grateful that I got the opportunity to do it."

Facilitator John E. Brunette, who is Superintendent of Conventional Machining in Fort Worth's factory, saw the workshops as an opportunity to get experience in introducing new concepts to people. He said the workshops also gave him experience in "handling groups that initially were not totally enthusiastic about being there."

Gaye J. Lawrence of Engineering Personnel Services said she volunteered to be a facilitator because she believes in the importance of the ethics program. "Facilitating the workshops was an excellent link between my career specialization in adult education and my training responsibilities in the Research and Engineering Department," she said. "It was very rewarding."

Another facilitator, John L. Evans, Director of Procurement Quality Assurance, said he enjoyed the experience because it allowed him to meet a lot of Quality Assurance Department employees that he had never worked with. "It was a challenge, and I felt that it was a very important task," he said.

Other facilitators said the workshops allowed them to hear ethics discussions among employees from departments outside their own, which gave them a better understanding of departments' common problems. This enhanced their view of the total organization of the division and General Dynamics, they said.

"Overall, the facilitators put a lot of time and energy into the workshop program, and many of them were creative and innovative in approaching their tasks," Stangl said. "One facilitator produced computer-generated charts instead of writing them by hand, and another used computer graphics to develop handouts that the participants could use. We (the Management Development staff) found that we were learning things from the facilitators."

Thirteen Employees Receive Awards After Presenting Papers at Electric Boat Program

Thirteen employees who combined to make eight presentations at Electric Boat's Professional Honors Program recently were honored with certificates of award. The awards were presented by Herbert E. Berry, Vice President of Engineering.

Keyed to an overall theme of "Taking Technology through Tomorrow," the eight papers addressed the emerging impact of computers in every aspect of the division's business, from design to manufacturing to logistic support.

Participants described how the application of advanced computer technology — including interactive graphics, data base management, artificial intelligence and sophisticated analytical techniques — is transforming traditional design processes. Also discussed were improved design techniques for reducing fire hazards on board submarines

and development of nonmetallic composite materials for submarine components.

The Professional Honors Program enables Electric Boat employees to develop professional standing in their fields, recognizes significant achievements and promotes communication among disciplines. Papers are selected on the basis of relevance to the theme, innovation and contribution to the advancement of submarine technology.

The engineering personnel recognized in the Honors Program and their topics were:

Kathleen Madden, Senior Engineer, and **Karl Hughes**, Structural Engineer, coauthors, "Computer Technology with Respect to Fluid Systems Design."

Stephen Baum, Engineering Supervisor, "A Structured Approach to Developing a Computer-Aided Engineering System."

Kamal Matta, Principal Engineer, "The Application of Statistical Energy Analysis to Structural Systems."

Harry Millwater, Engineer; **Karl Dyka**, Engineering Specialist; and **Alan Remondi**, Senior Engineer, coauthors, "Developments in Boundary Element Technology."

Darte Bolton, Senior Software Engineer, and **Kenneth Brindamour**, Senior Engineering Assistant, coauthors, "Pipe Shop Computer-Integrated Manufacturing."

Mark Hytha, Electrical Engineer, "Expert Systems - the Key to the Future of Submarine Support Technology."

Cameron MacKenzie, Senior Engineer, "Taking Fire and Smoke Technology through Tomorrow."

George Leon, Principal Engineer, and **Robert Kain**, Engineering Specialist, coauthors, "The Future of Reinforced Composites for Submarine Structures."



Synk



Richmond



Reeves



Chernansky



Limer



Haist

Six Children of Company Employees Win Four-Year College Scholarships

Nine high school students have won company-sponsored, four-year college scholarships to begin in September. Six of those selected are children of present or past employees of General Dynamics.

Seven of the winners have been awarded National Merit Scholarships, and two have been awarded National Achievement Scholarships. The scholarship program is administered by the National Merit Scholarship Corporation.

The National Merit Scholarship winners announced recently were:

Emily J. Synk, 17, of Southfield, Mich., the daughter of Bernard J. and Margaret Z. Synk. Her father is a software supervisor at Land Systems.

Emily plans to attend Harvard University and study electrical engineering.

Sally A. Richmond, 18, of Westerly, R.I., the daughter of Bruce R. and Joyce C. Richmond. Her father is an engineer supervisor at Electric Boat.

Sally plans to attend Harvey Mudd College and study engineering.

Harold E. Reeves, 18, of Fort Worth, Tex., the son of Harold E. and Rosalyn G. Reeves. His father is the Boiler

Room Maintenance Supervisor at Fort Worth.

Harold plans to attend the Massachusetts Institute of Technology and study engineering.

Diane K. Chernansky, 17, of Gales Ferry, Conn., the daughter of Robert J. and Gail L. Chernansky. Her father is an electrical engineer at Electric Boat.

Diane plans to attend Princeton University and study business administration.

Thomas S. Limer, 18, of Arlington, Tex., the son of William T. and Julia F. Limer. His father is a supervisor at Fort Worth.

Thomas plans to attend the University of Texas and study engineering.

Angela C. Haist, 18, of Yorba Linda, Calif., daughter of Donald L. and Carol A. Harter. Her father is a service specialist at Datagraphix, Inc., a General Dynamics subsidiary at the time of Angela's application.

Angela plans to attend the University of California and study business administration.

Kenneth L. Campman, 18, of Los Angeles, Calif., the son of Charles A. and Marilyn A. Campman. His father is an engineer/writer specialist for Hughes Aircraft Company, and his mother is a nursery school director.

Kenneth plans to attend the California Institute of Technology and study engineering.

The National Achievement Scholarship winners are: **Alethea K. Morris**, 17, of Lawton, Okla., the daughter of Frank C. and Wyvonia P. Morris. Her father is in the U.S. Army and her mother is a preschool teacher.

Alethea plans to attend the University of Oklahoma and study aerospace engineering.

Derwin Briggs, 18, of Columbia, S.C., the son of Margaret Scott (Guardian), a home attendant.

Derwin plans to attend the Georgia Institute of Technology and study chemical engineering.

The four-year scholarships provide for a minimum of \$1,000 to \$3,000 a year, depending on the cost of tuition and the family's financial status.

Each year, General Dynamics sponsors six National Merit Scholarships for outstanding students who are children of General Dynamics employees. The company also sponsors two National Achievement Scholarships for students who live in the area of one of the corporation's facilities. These two students need not be children of General Dynamics employees.

Soviets Are Not the Only Intelligence Threat, Director of Security Warns

It is a mistake to assume that the Soviet Union provides the only threat from intelligence activities against the United States, according to William I. Ferrier, Corporate Director of Security.

"Communist countries pose the principal threat, but many other countries — hostile, allied, friendly and neutral — engage in intelligence operations against the United States," Ferrier said.

Being alert to such activities is vital to General Dynamics employees, Ferrier said, because the intelligence targets, which include American high technology information, are the same as those of the Soviets.

A recent corporate security briefing presented by Ferrier to all divisions, entitled "The Soviet Acquisition of Western Technology," delved into the relationship between Soviet and Warsaw Pact intelligence services. "The success of the East European services can be attributed partly to

the Western misconception that these countries are less of a threat than the USSR," Ferrier pointed out.

"Among foreign intelligence services, those of the Soviet Union represent by far the most significant intelligence threat in terms of size, ability and intent," Ferrier said, "but the activities of Warsaw Pact countries and Cuban intelligence services are primarily significant to the degree that they support the objectives of the Soviets."

Ferrier added that the intelligence threat from the People's Republic of China is significant but of a different character, and the intelligence activities of North Korea, Vietnam and Nicaragua pose a lesser but still significant threat.

"The intelligence services of Poland, East Germany, Czechoslovakia, Bulgaria and Hungary not only serve their own national interests, but they also act as surrogates

for Soviet intelligence," Ferrier said.

Ferrier said that the intelligence activities of still other countries cannot be ignored, although they do not represent a comparable threat. "Nonetheless," he said, "in 1985, arrests for espionage included U.S. Government employees who passed on classified information to Israel and Ghana."

The case of the U.S. Government employee who turned over classified information to Israel has raised questions as to whether significant elements of the Israeli government have engaged in more extensive espionage operations in the U.S., Ferrier said.

"While the strategic threat in such a case is less than that from the Soviet bloc or People's Republic of China operations, the harm to specific U.S. foreign policy interests and legal safeguards is still substantial and totally unacceptable," he said.

Names Make News, and They Also Make Good Convair Advertisements

Convair is looking for another DaVinci, Newton, Edison and Von Braun. It is also interested in finding another Da Silva, Newman, Hardison or Van Dorn.

The last four names belong to Convair employees who are participating in a prize-winning "sound alike" recruitment advertising campaign, the joint effort of Convair's Human Resources Staffing department and Knoch & Meads advertising agency.

The employees have names similar to famous names in science, and they also represent the engineering skills needed by the division to staff its programs.

Corrine Hardison's photograph was featured with that of Thomas A. Edison in an ad that read "We're looking for another Edison . . . And another Hardison." The advertisement ran in various national publications and metropolitan newspapers during January and February. Hardison, an electrical engineer who works in Ground Launched Cruise Missile System Engineering, said she has enjoyed lending her name to the recruiting program.

Several old friends from other companies have called Howard Newman to tell him they had seen him in the advertisement "We're looking for another Newton . . ." Newman, a senior project engineer, is a 30-year employee of Convair who works in navigation hardware and software development.

"There is a fascination in being able to match up the names of our bright, able employees — whether relative newcomers or long-term members of our team — with names that are of long-standing historical significance," said George W. Roos, Division Vice President of Human Resources.

"It also lends immediate, visible evidence that we are



Convair engineers who have lent their names to a recruitment advertising campaign are (left to right) Corrine T. Hardison, Diedre Da Silva, Howard L. Newman and Nicholas H. Van Dorn.

striving to be a people-oriented organization," he said, "with the photos providing snapshots of how we view the entire team."

The *San Diego Union* and *Tribune* awarded first place in recruitment advertising for 1986 to Convair's "Great Talents" campaign.

Value Engineering Awards of \$7 Million Won by Fort Worth

The U.S. Air Force recently approved supplemental contract agreements for two Value Engineering Change Proposals (VECPs) that together will net more than \$7 million in awards for Fort Worth.

The VECPs will result in combined savings to the Air Force of more than \$15 million over the life of the F-16 program.

Both VECPs had been in the works for more than three years. Their development and approval resulted from cooperative efforts that involved many division departments, including Contracts and Estimating, Proposal Plans, Engineering, Production, the F-16 Program Office and Cost Reduction.

In signing the supplemental agreements on behalf of General Dynamics, Charles A. Anderson, Vice President and Fort Worth General Manager, said the benefits they will bring to the customer and the company make them well worth the efforts that were required on the part of many employees.

One contract change, VECP 0668, providing for the redesign of fuel pylons, will result in total savings of \$12.2 million and earned General Dynamics a \$5.8 million savings share. The new pylons, for the F-16's 370-gallon fuel tanks, allow a simpler manufacturing process and have only 24 parts, compared to the 62 parts in the original pylon design.

The other contract change, VECP 1013, will result in a total savings of \$3.3 million and earned General Dynamics a \$1.3 million savings share. The VECP will reduce shipping costs of F-16 components manufactured in Europe and at Fort Worth for overseas transfer under the multinational F-16 coproduction program.

Savings and Stock Investment Plans

Annual Rate of Return for the
12 Month Period Ending:

	March 1985	March 1986	March 1987
Salaried			
Government Bonds	10.1%	17.5%	7.4%
Diversified Portfolio	25.2%	44.3%	26.4%
Fixed Income	12.5%	12.2%	11.9%
Hourly			
Government Bonds	10.1%	16.9%	7.7%
Diversified Portfolio	24.8%	44.4%	27.9%
Fixed Income*	N/A	12.3%	11.9%
GD Stock Closing Price	\$73.00	\$85.00	\$71.87

* Fixed Income effective 6/30/85

NMA Chapter Gives Jackets to Needy Fort Worth Children

Fort Worth's National Management Association chapter has donated 49 jackets to needy boys and girls at a local elementary school.

The project was initiated after Penny A. Comparini, the chapter's Manager of Community Projects, learned that many students at Springdale Elementary School in the Fort Worth Independent School District lacked adequate winter clothing.

Robert D. Honea, the NMA chapter's Vice President of Community Activities, said the jackets were purchased at several stores in the area. It took considerable effort to find the right number of jackets in the required sizes, he said.

The chapter provides regular assistance to Springdale Elementary through the Fort Worth ISD's Adopt-A-School Program. More than 80 companies and organizations in the Fort Worth area have "adopted" schools in the district, but their efforts seldom deal with such basic needs as proper apparel, said Toni Brown, Adopt-A-School coordinator for the Fort Worth ISD.

"These kinds of things are real important when children are going to school," she said.

Many of the students wrote letters of appreciation to the NMA for providing the jackets.

In a separate project, about 40 members of the Fort Worth NMA chapter are corresponding with Springdale Elementary students as pen pals. Brown said the letter writing program allows the children to practice their writing skills and also reminds them that someone cares about their efforts.



Special Olympics Volunteers. These Fort Worth employees and their family members, wearing blue F-16 T-shirts, were among approximately 200 from the division and Data Systems Central Center who recently volunteered to represent the company as helpers at the Area 11 Special Olympics competition. General Dynamics was a major backer of the event, providing more volunteers than any other company.

Land Systems and GT Devices to Develop Electrothermal Gun Systems for Late 1990s

Land Systems recently signed a multiyear Memorandum of Understanding with GT Devices, Alexandria, Va., for the development of electrothermal (ET) guns.

Electrothermal guns can replace the conventional chemical energy gun systems currently in use in ground combat vehicles. A high energy electrical pulse is used to accelerate the projectile from the gun tube instead of the chemical energy explosion used in conventional weapons.

GT Devices originated the ET gun concept, and its research over several years has validated the technology for the concept.

Through the Memorandum of Understanding, GT Devices and Land Systems will develop this technology for practical use for future gun/weapon systems, and Land Systems will fund a portion of the research and develop-

ment activity at GT Devices.

Use of a high energy electrical pulse provides a capability that achieves higher energies and greater velocities from the same gun tube with the same projectiles. The elimination of a conventional ammunition propellant can also improve vehicle survivability.

"The U.S. Army has an interest in developing new weapons and weapons systems for potential fielding in the late 1990s," said Roger K. Waid, Engineering Program Management Chief. "Electrothermal technology can meet the challenge to develop high energy guns for military weapons systems. The Land Systems/GT Devices team is leading the development of this major new technology in support of the U.S. Army initiative."

Employees Provide Services at Science Fair

More than 20 General Dynamics employees served as judges at the 36th Annual Fort Worth Regional Science Fair, held recently on the campus of Texas Christian University.

Fort Worth, through the division's National Management Association chapter, also provided employees to help set up and coordinate the fair. In addition, Data Systems' Central Center provided automation services to help catalog and index the more than 1,200 exhibits entered in the fair by middle school and high school students from the area.

Fort Worth also sponsored the annual General Dynam-

ics Award, presented for the most outstanding entry in aerospace engineering.

The division has been a major sponsor of the Regional Science Fair for several years, said Donald W. Goodwin, Engineering Chief in Thermodynamics, who serves as the NMA's Science Fair Manager.

"It's important that we support worthwhile youth activities like the science fair," said John Romanko, Chief Engineer in Fort Worth's Aircraft Vulnerability Hardening section and president of the NMA chapter. "From what I saw at the fair, there is going to be plenty of science talent in the future to keep our nation secure."



Delivery Milestone. The highly mobile Transporter Erector Launcher (TEL), the launch platform for the Ground Launched Cruise Missile, can operate off roads. The TEL provides transport, protection, elevation and launch support for four Tomahawk cruise missiles contained inside. Convair recently delivered the 100th production TEL to the U.S. Air Force.



Air-Minded Hobbyists at Fort Worth. A number of employees at Fort Worth are building or have built their own aircraft. At left, Richard W. Wolf prepares to taxi in the Smith Miniplane he built from purchased plans. At right, bottom, Kenneth V. Francis works on his Cozy airplane in his home shop. At right, top, Francis takes off in the completed Cozy's first flight.

Building Civilian Aircraft Is a Popular Hobby at Fort Worth By Joe Stout

At least 18 employees at Fort Worth have built or are building their own airplanes, usually working in home shops or garages strewn with fiberglass, lumber, styrofoam and aluminum.

This may seem like a large number of home aircraft builders to come from a single factory, but it shouldn't be surprising — considering that Fort Worth produces the F-16, one of the world's most advanced and capable fighters.

Some of the employees developed original designs for their flying machines, while others started with commercially available plans. They cite a variety of reasons for undertaking the projects: economics, fulfillment of a longtime goal, the excitement of a challenge and the lack of a factory-built airplane with a particular combination of flying qualities.

Some began their projects as experienced private pilots, but at least two are taking flying lessons concurrent with their construction efforts. They all gauge the lengths of their projects in years, from start to finish, and most admit that trial-and-error methods have been necessary in certain phases of the work.

A homebuilt aircraft must pass a Federal Aviation Administration inspection and be certified under the FAA's "experimental" category before its initial flight. The FAA also requires builders to fully document the construction process with photographs and other information.

Most of the homebuilders belong to the Experimental Aircraft Association (EAA), an international organization of sport aviation enthusiasts.

Robert W. Lynch, Engineering Chief of Preliminary Design Methods at the division, is currently working at home on a light airplane of his own design. He hopes to finish it this summer. "My goal was to build an airplane that could be completed at a total cost of less than \$2,000," he said. "This is my third try. I've had to go back to the drawing board twice, and the cost is closer to \$3,000."

Lynch's airplane is a low-wing "tail dragger" made of fiberglass, with a styrofoam core. It has a 20-foot wingspan, is powered by a two-cylinder, two-cycle engine and weighs 300 pounds empty. The airplane is designed to withstand 9g flight, and Lynch has already tested the strength of the airframe with a force equivalent to 6gs by placing cement bags weighing 2,560 pounds on the wings.

"The airplane will carry one person and eight gallons of fuel, which it will consume at a rate of about two gallons an hour," Lynch said. "The cruising speed should be about 110 mph."

Lynch has equipped the craft with landing gear incorporating go-cart wheels and brakes. The engine is pull-started with a cord in the cockpit.

He said he built and learned to fly an ultralight airplane in 1975, but he didn't obtain a private pilot's license until 1983. He started his present construction project about a year ago.

David J. Bloch and Michael A. Young, engineers in the Advanced Design group, are working together on an airplane they designed in their free time. "It's a tailless configuration," Young said. "It has a tapered wing and no horizontal tail. It resembles a 'flying wing' design, except that a true flying wing has no conventional fuselage, and ours does."

The two began designing the airplane in May 1986 and started construction last September. So far, they have built the main fuselage shell and begun the internal construction. They purchased a motorcycle engine to power

the airplane but decided it would be easier, cheaper and safer to install a 120-hp aircraft engine, Bloch said.

The airplane will be equipped with retractable landing gear and is expected to have a cruising speed of about 200 mph, with a range of more than 1,300 miles.

They hope the design will result in capabilities that are not usually available together in factory-produced light airplanes. "I want an airplane that will cruise fast, to travel cross-country, and Mike wants an airplane that will tear up the skies," Bloch said. "We've designed it for aerobatic stress levels."

The airplane has a styrofoam and fiberglass fuselage and wooden wings.

Michael T. Bridges, a software engineer with Data Systems' Central Center in Fort Worth, flew his homebuilt plane, a Long-EZ, for the first time last July. He built the airplane from purchased plans over a period of about four years. The Long-EZ, composed of fiberglass and styrofoam, was designed by Burt Rutan, designer of the *Voyager* and brother of its pilot, Dick Rutan.

Bridges received his pilot's license in 1982 and began building the plane a few months later. The Long-EZ is a canard configuration, with the horizontal stabilizer located forward of the wing and the propeller aft, behind the cockpit, to "push" the airplane in flight. The cockpit has reclined seats and a side-mounted control stick, which makes it a little like an F-16 cockpit, Bridges said.

"It's extremely satisfying to fly an aircraft that you built yourself," Bridges said. "The first time I took it up, the thrill didn't hit me fully until about an hour after I landed. It was quite a feeling."

Shelton O. Stewart, an engineer in Mechanical Power Systems, is currently building a Pitts Special aerobatic biplane. Pitts biplanes have been the workhorse of stunt flying since 1944, and Stewart is building his from purchased plans that he modified slightly. He has held a pilot's license since 1978, already flies aerobatically and intends to use the Pitts in competition flying.

Stewart is constructing the airplane using techniques from the 1930s. It is composed chiefly of steel tubing and wood with fabric covering. "I may be one of the youngest persons (at 26) using these techniques to build an airplane

today," Stewart said. "I think it's amazing that the Pitts is still competitive in world-class aerobatics after all these years."

The airplane will be about 16 feet long and will have a 17.5-foot wingspan. Stewart is making small changes in the design of the landing gear, wings and rudder. "Eventually, I'll add a closed canopy instead of the open cockpit," he said. He has nearly completed the plane's fuselage structure and has started the wings.

Stewart said there have been unexpected expenses in building the airplane. For instance, it has caused him to buy a house, he said. "I couldn't arrange financing to buy an airplane, but I was able to obtain a home loan. The reason I own a house is to build my airplane," he joked.

Other employees who have built airplanes include Rich W. Wolf, a Flight Test engineer, who built a Smith Miniplane aerobatic biplane; Kenneth V. Francis, a Quality Control engineer on Fort Worth's flight line, who built a Cozy, similar to the Long-EZ; and Glenn E. Frick, Assistant Project Engineer in Plans/Programs Analysis, who built a Pitts. Engineer John C. MacGuire of Advanced Design restored and modified a 16-year-old Pitts, incorporating features of his own design to increase its performance.

Others who are presently building airplanes include R. Dean Thompson, a Simulation engineer, who is building an RV-3 aerobatic plane; John A. Burns, a Central Center software engineer, who is building a KR-2 wood and styrofoam aircraft; Ross A. Benson, a Structures engineer, who is building a Long-EZ; and William S. Grant, a Maintainability engineer, who is building an RV-4 and restoring a Cessna 140.

In addition, Andrew K. Duff, an engineer in Armament Systems, is building an RV-3, and Jim M. Hurdle and Wesley B. Anderson, engineers in Structural Design and Advanced Programs, respectively, are building RV-4s. Rodney Hctor, a contract employee working in Fuselage Design, is building a Pitts, and engineer Kevin J. Renshaw of Advanced Design is building a flying-wing-configuration soaring plane that he designed himself. Renshaw's aircraft is a manned glider, but it will be capable of climbing to altitude under its own power.



Original-Designed Homebuilt. Fort Worth employee Robert W. Lynch inspects airplane that he is building from original plans. Lynch hopes to have the airplane ready for flight sometime this summer.

GENERAL DYNAMICS World

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Land Systems Gets Multiyear M1 Contract Valued at \$3.5 Billion

The U.S. Army Tank Automotive Command (TACOM) has announced that the Land Systems Division has received the largest multiyear contract ever awarded by TACOM for up to 3,299 M1A1 Abrams tanks to be delivered over the next four years.

The contract is valued at \$3.5 billion. The first tank was delivered in May, with the final delivery scheduled for April 1991. Land Systems is to produce 840 vehicles in the first delivery year, with 720 tanks to be delivered in each of the remaining years of the contract. The remaining 299 tanks are to be delivered on option by April 1991.

"We are extremely pleased to receive this multiyear contract," said Robert W. Truxell, Vice President and Land Systems General Manager. "It enables us to produce the highest quality product at the lowest possible cost for our customer."

"In cooperation with the Army, we have invested over \$15 million in our facilities to ensure efficient production through the life of the contract," said Truxell. "We have made innovative strides in equipment and processes, including projects in automation as well as technical improvements in welding and inspection."

"In addition," he said, "we were able to procure the necessary components economically through long-term commitments with our suppliers. Competition was stressed and orders for similar parts were combined to keep costs down."

More than 4,100 M1 series tanks have been delivered since 1980, the year the Abrams went into service. The tanks are built at Land Systems facilities at Warren, Mich., and Lima, Ohio.

Multiyear deliveries will be split evenly between the Warren and Lima assembly lines.

General Dynamics has approximately 10,000 tank production employees in Scranton, Pa.; Lima; and the Detroit metropolitan area. No immediate effects on employment levels in any of these areas are expected.

Recent AFTI Tests Leading to Future Use Of Combat Automation

A phase of flight testing completed recently in the Advanced Fighter Technology Integration (AFTI) program, flown in the Fort Worth-modified AFTI/F-16 testbed aircraft, has paved the way for combat automation technologies that will be applied to the Free World's next generation of military aircraft.

The AFTI/F-16 Phase II tests concentrated on the airplane's Automated Maneuvering and Attack System (AMAS), which integrates the capabilities of computerized flight controls and fire controls to achieve automated delivery of weapons.

The successful test program "reached a number of milestones which brought to fruition more than a decade of planning, development, integration and testing," said Lt. Col. Donald H. Ross, Program Manager for the AFTI/F-16 at the U.S. Air Force Air Systems Division's Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio.

The milestones included many aviation firsts, such as the ability to score a precision hit on a target while making a 5g curvilinear turn at altitudes as low as 200 feet, Colonel Ross said.

"The AFTI/F-16 program has clearly shown the payoff of extensive integration and automation in improving terminal weapon delivery and aircraft survivability in a low-cost, operationally suitable configuration," said Max E. Waddoups, Fort Worth's AFTI/F-16 Program Director.

The AFTI/F-16 program is a joint effort of the Air Force, U.S. Navy, U.S. Army and National Aeronautics and Space Administration. Fort Worth is the prime con-

(Continued on Page 7)

Key Company Executives Will Be Appointed To Study Employee Survey Recommendations

Chairman Stanley C. Pace and President Oliver C. Boileau are forming teams of key General Dynamics executives to work on recommendations that address corporatewide issues raised by the recent survey of employees.

The recommendations resulted from a meeting of divisional general managers and corporate officers June 1st. After hearing remarks from David Sirota, Chairman of Sirota and Alper, Inc., the consulting firm assisting with the survey, the general managers divided into groups to deal with six categories of corporatewide issues surfacing from the survey.

Most of the groups suggested assigning study teams to better address employee concerns. These suggestions are the ones that have been acted upon by Pace and Boileau.

Details of the issues to be tackled and the makeup of the study teams will be forthcoming in a special issue of *General Dynamics World*.

Sirota, who analyzed the divisions' plans and recommendations at the meeting, said, "It is refreshing for us to work with a company that is as committed to taking action as General Dynamics is."

He added that as a group, the reports were the best set of plans he has seen for the first time through the process in any company. It normally takes a company 10 years to reach that level of quality planning, he said.

Meanwhile, each division is implementing its plans arising from the survey and communicating them to all employees.



Dedication Ceremony Held. U.S. Senator Strom Thurmond of South Carolina speaks to employees of Electric Boat at the Bushy Park steel fabrication center near Charleston, S.C. Behind him on the podium are (from left to right): Fritz G. Tovar, Executive Vice President and Electric Boat General Manager; James R. Mellor, Executive Vice President-Marine, Land Systems and International; Lester Crown, General Dynamics Executive Vice President and Chairman of the Material Service Corporation; U.S. Representative Arthur Ravenel Jr. of Charleston; and Constantin Hatzis, Vice President and General Manager of the Charleston Facility.

Congressmen and Local Government Officials Welcome Company Back to Charleston

By Chris R. Schildz

United States Senators Ernest Hollings and Strom Thurmond of South Carolina put out the welcome mat for Electric Boat at the May 23rd dedication of the Bushy Park steel fabrication center near Charleston, S.C.

"We are delighted to have General Dynamics back in town because we are fighting today to maintain the industrial backbone of the United States," Senator Hollings told approximately 250 Bushy Park employees and family members.

"We are not a Third World country, and we must behave as a world power," Senator Hollings said. "We must be

Others on the program representing the government and the company included United States Representative Arthur Ravenel Jr. of South Carolina; Lester Crown, Executive Vice President and Chairman, Material Service Corporation; Fritz G. Tovar, Vice President and Electric Boat General Manager; Constantin Hatzis, Division Vice President and General Manager, Charleston Facility; James R. Mellor, Executive Vice President-Marine, Land Systems and International; and Brian "Keith" Jeffcoat, warehouseman, Charleston Facility.

Jeffcoat, the facility's newest employee, was selected to recite the pledge of allegiance to start the ceremony, conducted in the 100' wide and 800' long bay area of the fabrication shop.

Decks, foundations and tanks will be made in the fabrication shop for Trident missile and SSN 688 attack submarines being built by Electric Boat for the U.S. Navy, and later for the SSN 21 class of attack submarines for which the company will compete.

The plant, which closed in 1982, will provide jobs for 250 to 300 employees in 1987 and for a total of 500 when the facility reaches full production in 1988.

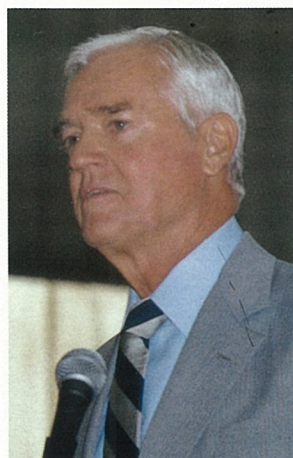
John Hill, a senior engineering assistant, was employed at the facility in 1982 when the market for the huge liquefied natural gas spheres assembled at Bushy Park evaporated with the dwindling energy crisis of the 1970s.

"I was asked to come back to Bushy Park," said Hill, who brought his wife and two children to the dedication ceremony. "I'm familiar with the plant and it's good to be back here in Charleston."

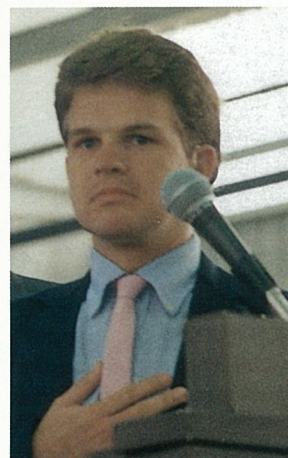
More than 11,000 applications from around the East Coast were received for the new jobs at Bushy Park.

"Hiring will be local," said Mellor, who was interviewed by area television stations. "There will be only a handful of people from Groton or Rhode Island at this plant."

(Continued on Page 3)



Senator Hollings



Jeffcoat

able to produce steel, glass, rubber and aluminum products . . . if we are to maintain our industrial capacity as a world power, and that's really what is at issue here."

Senator Thurmond also welcomed General Dynamics personnel to his state, saying, "We are very proud to have . . . General Dynamics — the leading defense contractor in the country — here again. It will be a great asset to our nation and a great asset for South Carolina."

New Ombudsmen Receive Immediate Response Through Employee Calls, Letters and Visits

Employees concerned with personnel matters have been contacting the newly appointed Personnel Ombudsmen through phone calls, letters and visits, according to Robert L. Abernathy, Corporate Personnel Ombudsman.

Chairman Stanley C. Pace on Mar. 16th announced that each division and subsidiary would have its own Personnel Ombudsman who would be provided with a 24-hour Personnel Hotline. At that time, Pace said that "to threaten or take reprisal against employees for their use of the hotline or for contacting the Personnel Ombudsman will not be permitted . . . Strong corrective action will be taken if it occurs."

Appointments of Personnel Ombudsmen were made shortly after Pace's announcement.

Abernathy said that the hotline answering machines were in place by the end of March and that posters announcing the corporate and local hotlines were prominently displayed at all divisions and subsidiaries in the first two weeks of April.

"Between mid-April and May 1st," Abernathy said, "Personnel Ombudsmen received 323 contacts. Of these, 189 telephone calls, letters or visits requested information or advice regarding employee relations matters. In addition, 134 calls, letters or visits expressed concerns or made allegations."

"All of these contacts will receive proper investigations and, hopefully, satisfactory resolutions," Abernathy said.

Abernathy said, "The goal of General Dynamics' Personnel Ombudsmen is to provide assistance to all employees in the resolution of their work-related human relations concerns, complaints and problems in a fair, expeditious and equitable manner consistent with the individual's needs and those of the corporation."

In addition to Abernathy at the Corporate Office, there are 29 Ombudsmen at the divisions and subsidiaries. Abernathy has a toll-free 800 number for corporatewide calls and a local number for Corporate Office calls.

New Valley Systems Tasks Expand Ethics Awareness

By Jerry Littman

A special program established at Valley Systems Division ensures that ethics awareness is an integral part of the division's everyday activities.

Donald D. Skinner, the division's Ethics Program Director, has greatly expanded visibility of the ethics program by enlisting the assistance of 15 Departmental Ethics Representatives. The representatives combine their primary work with a variety of tasks related to ethics awareness.

"This system has worked extremely well for us," Skinner said, "because our representatives are able to respond quickly to concerns expressed by employees. Of course, if the representatives are not able to provide guidance to an employee, they turn the matter over to me."

The ethics representatives were selected by department supervision because of their knowledge of corporate and division policies and regulations. The effectiveness of the representatives is greatly enhanced because they are known and trusted by their peers, Skinner said.

John F. Scheible, Vice President of Material Acquisition, said he is glad to have a Department Ethics Representative, whose role is essential for the department to comply with company ethics policy. "It's a key function in Material Acquisition," he said.

"Our employees call the Department Ethics Representative when they have questions," Scheible said. "Many suppliers and subcontractors also seek guidance from the representative."

Jules W. Longoria, Manager of Material/Financial Support, is the Ethics Representative for the Material Acquisition Department. He is responsible for providing the division's vendors and suppliers with copies of the General Dynamics Standards of Business Ethics and Conduct booklet.

To date, approximately 1,800 vendors and suppliers have received the booklet. New vendors and suppliers also receive copies of the booklet.

Many additional ethical dilemmas were raised by Material Acquisition employees as a result of three Ethics Awareness Workshops conducted by Longoria. He promised to provide the answers to all department employees. He has also responded to many other questions and is preparing additional replies.

Longoria said he also "supports and assists Skinner in resolving issues received via the Ethics Hotline."

Another ethics representative, Marsha L. Parmenter, Project Administrator for the Engineering Department's Systems Engineering and Design Branch, is responding to questions raised at department workshops by the 850 department employees.

More than 300 ethical dilemmas in 13 categories were posed. These included travel, procurement, labor charges, new business funds, hardware, software and computers, personal values, employment development, security, quality, labor unions, task planning and bidding and miscellaneous.

Responses will then be published for all department employees.

In addition, Parmenter is available to answer questions posed at the department's staff meetings and to give direct ethics guidance to employees.

As the department's Ethics Representative, Parmenter is also concerned that time cards are filled out properly. She said that each section in the department has a time card monitor who daily audits time cards to ensure they are filled out correctly. Weekly reports are submitted to her and to department executives. The error rate has gone down considerably because of the monitoring, she said.

"Ethics is a very important part of our department because we deal directly, almost on a daily basis, with the customer," said Thomas G. Metzger, Director of Customer Relations/Business Development. "Employees have to know the rules, and that's why I provide up-to-date information as it becomes available."

Charles Anderson Honored

Charles A. Anderson, Vice President and Fort Worth General Manager, recently received an Engineering Alumni Honor Award from Texas A&M University, from where he was graduated with a bachelor's degree in Aeronautical Engineering in 1955.

The award was presented to Anderson by Dr. Herbert H. Richardson, Deputy Chancellor for Engineering at Texas A&M, during a ceremony on the university's campus in College Station, Tex. Anderson was recognized for his leadership in aircraft concept development, design procedures and management.

General Dynamics Personnel Ombudsmen			
Division/Subsidiary	Location	Personnel Ombudsman	Hotline Number
Corporatewide	St. Louis	Robert L. Abernathy	800-322-9299
	Cessna Aircraft	Fred C. Bright	316-946-7360
	Convair	Joanne Kowalik	619-573-9528
	Corporate Office	Robert L. Abernathy	314-889-8480
Data Systems	Washington	Paul W. Maul	703-553-1367
	St. Louis	Nick L. Gasaway	314-851-8925
	Fort Worth	Carol F. Pendley	817-737-1820
	Norwich	Harold H. Stoddard	203-823-2305
Electric Boat	Pomona	K. Wayne Davis	714-868-3120
	San Diego	Nan M. Boulais	619-576-5739
	Groton	Donna M. Simpson	203-441-1200
	Avenel, N.J.	Richard G. Heckman	201-636-3798
Electronics	Quonset Point	Robert D. Savini	401-268-2909
	San Diego	Michael M. Brown	619-573-5600
	Fort Worth	William G. Nutt	817-777-2656
	Abilene	James W. Hill	915-691-2810
Freeman United	Chicago	James T. Ryan	312-443-6910
	GD Services	Mary C. Linder	314-851-4046
	Land Systems	Donald W. Ishmael	313-583-5898
	850 Building	Diane R. Slis	313-497-7680
Material Service	Center Line	Owsley G. Spiller	313-573-1113
	Lima	W. Edward Londo	419-226-4407
	Scranton	Calvin B. Smith	717-876-2469
	Chicago	Edward K. Wilverding	312-372-3600
Pomona	Pomona	LaVerne D. West	714-868-1010
	Camden	Ronald K. Hill	501-574-4468
	Navajo	Cub D. Tashner	602-729-6557
	San Diego	Roberta C. Baade	619-547-8990
Space Systems	Cocoa Beach	Jimmie B. Fletcher	305-783-4812
	Vandenberg AFB	Norman D. Page	805-865-5330
Valley Systems	Rancho Cucamonga	H. Daniel Altmire	714-945-8094



Cost Reduction Recognized. General Dynamics was honored recently with the Golden Shears award for its cost reduction efforts in 1986. The presentation was made at a Value Engineering Congressional Reception held in Washington, D.C., sponsored by the Society of American Value Engineers and by U.S. Senator Carl M. Levin of Michigan and U.S. Representative David Dreier of California. Shown during the presentation are (left to right): Senator Levin; J.S. Acharya, Corporate Director of Production Engineering; Congressman Dreier; and Earl E. Hatchett, Vice President-Finance at Fort Worth. Acharya and Hatchett were among the officials who represented General Dynamics at the reception.



Pamela Ryczek, a Land Systems Security Officer, was one of the first General Dynamics employees to complete the government's Facility Security Officer Certification Program at Richmond, Va. The certification program was established by the Secretary of Defense this year and becomes mandatory on July 1st.

Government Officials Welcome Company Back to Charleston

(Continued from Page 1)

Company officials have emphasized that the reopening will have no effect on employment levels at either Groton, Conn., or Quonset Point, R.I.

Tovar said, "When we needed additional manufacturing capability in Groton and Quonset Point, I immediately thought of Charleston, not only because of the facility here, but because of the dedicated people and high productivity that we were getting building spheres."

The activity at Bushy Park is expected to help the company reach its goal of providing the highest quality product at the lowest possible cost. "The Bushy Park plant is an opportunity to compete more effectively for submarine contracts and an opportunity to build them more efficiently," Mellor said.

Operations in W. Germany Approved for Citation S/II

Cessna Aircraft Company's Citation S/II business jets have been certified for operation in West Germany. Government approval of the Citation S/II was received from the LBA, the West German aviation authority, in April.

There are 26 Citations operating in West Germany, and Cessna has received orders for five Citation S/II's from German companies.

Other European countries in which the Citation S/II is certified are Italy, Switzerland, Austria and Yugoslavia.

Current & Comment

(Observations on news of interest to the company and the industry will appear regularly in this column.)

PLEASE STAND BY - CBS-TV's "60 Minutes" is planning a story about the recent Tampa, Fla., court award of \$3.1 million to Janet Harduvel, whose husband lost his life four years ago in an F-16 accident in Korea. The producer of the segment, who said that it will be aired in October, has asked that the company consider participating "to comment about the case and the significance of it." Meanwhile, GD, through its attorneys, will appeal the verdict.

* * *

LITIGATION UNLIMITED - Today's unprecedented explosion of lawsuits in U.S. courts has resulted in a civil justice system out of control. Not only has it taken the justice and the citizenry confidence out of the system, but billions of dollars, as well, out of the pockets of American families and American businesses.

The facts are incontrovertible. Almost half of every dollar awarded in suits goes for legal fees. The average jury case takes more than four years to resolve. Insurance premiums have skyrocketed. A system that has served us well over the years is now faltering — and American society and productivity are suffering.

Private citizens and industry alike are finding that there are risks associated with all aspects of life — and are becoming the object of suits so frivolous and irresponsible as to offend the conscience. A woman riding in a car spills hot coffee on herself — then sues the restaurant where she bought the coffee. A minister is sued for being "negligent" in providing private counsel. Recreational facilities are shut down and school sports programs are abandoned from fear of suits. A telephone company is held liable for damages suffered when a drunk driver smashes into an occupied roadside telephone booth.

Statistics surrounding the law profession itself tend to speak for themselves. The U.S. has more than 90 percent of the world's lawyers — and 36 times as many as Japan. In fact, in one year we license more lawyers than the total number in that country. Moreover, a University of California study of 52 nations recently revealed that the higher the percentage of lawyers in a country's work force, the lower that country's economic growth rate.

These are both the symptoms and the consequences of a cost- and delay-plagued civil justice system that has strayed far from its proper purpose. Anyone, anytime and anywhere, is vulnerable to its vagaries and painful verdicts.

The trend toward megadollar awards which began in the '60s has escalated today to a scenario in which all normally acceptable sound business practices (or even "Good Samaritan" actions) must be painstakingly weighed against the potential of a lawsuit. A man who stalled on an interstate highway later found himself held liable in an \$885,000 judgment — because someone who stopped to aid him was rear-ended.

All of this is not without far-reaching effect. A mentality is being fostered which discourages one from acting when one should, from speaking when one should, or from

helping when one should. Time, energies and capital are being diverted from productive living and from productive business operations in order to defend against litigation or possible litigation.

Industry and every company therein is perceived as having not merely deep but bottomless pockets, and the trend is taking its toll. The recession of the General Aviation industry, for instance, is clearly tied to soaring liability costs. Between 1961 and 1985, product liability insurance costs jumped from an average of \$51 to \$70,000 for each airplane delivered! "Nothing has hurt general aviation as consistently and as severely as the U.S. tort system," said the president of the General Aviation Manufacturers Association last year.

While product liability suits in most industries are not uncommon, the \$3.1 million award in Tampa against GD (see first item) was extremely so. It involved a defense against product liability claims known as the "government contractor defense," a principle which says that a contractor cannot be held liable for injuries to third parties resulting from the use of a weapons system produced to government specifications. This issue is a lively matter before federal courts today, including a key case involving Grumman, LTV and United Technologies which is expected to be decided by the U.S. Supreme Court this fall.

At a time when the price of doing business in most industries is rising dramatically in the face of budget-biting competition, the dollar and human resource costs of defending against unreasonable attacks in court create an additional and most unwelcome burden. Even more damaging, however, is the overall negative effect on all Americans of a civil justice system which ignores fairness. It's clearly time for reform.

* * *

FALCON SALUTE - Fort Worth's F-16 was a star performer during recent "June Week" graduation ceremonies at the U.S. Air Force Academy in Colorado Springs, Colo. Fighting Falcons from Luke Air Force Base, Ariz., conducted a flyover at the Class of '87 Organizational Awards Parade while the USAF Thunderbird Team capped the Graduation Day program with a spectacular 15-minute demonstration over Falcon Stadium. Air Force Secretary Edward C. "Pete" Aldridge, featured speaker, called the F-16 and F-15 "the finest systems flying today."

* * *

THAT'S PERFORMANCE! - MIAI tanks built by employees at Land Systems' Detroit Arsenal Tank Plant are showing a 96 percent Readiness Rate according to a recent congratulatory letter from DATP Commander Lt. Col. M.J. Neuman.

"The most recent data available shows the government inspectors at the delivery site found less than one defect per tank assembled at DATP. That statistic is remarkable considering the technology of the MIAI and serves as a tribute to the teamwork among all the work force," Colonel Neuman said.

Employees Describe Their Enjoyable Vacations in Offset Tours Program

Employees at Fort Worth had nothing but praise after returning recently from trips they took as part of the General Dynamics Offset Vacations program.

Grace Grider, Graphics Arts Illustrator, and Kathy Luper, Executive Development Administrator, told the audience at a recent General Dynamics Offset Vacation Travel Show about the sightseeing and the shopping they enjoyed.

"The sightseeing was impressive," said Grider, who visited Hong Kong. "The sights and sounds of the city were things I'll never forget — and so were the incredible shopping bargains."

Luper said she found similar bargains in Korea. "The beauty of the country and the friendliness of the people made shopping there a real pleasure," she said.

Jim Rode, Photographic Laboratory Technician, Document Control, also participated in an offset vacation to Hong Kong and the Orient. His favorite part of the trip was the food. "The food was so fresh," he said. "We ate very well."

The quality of service impressed the travelers. "Korean

Air (carrier for General Dynamics Offset Vacations to the Orient) did everything for us," Grider said.

"Percival Tours (operators of General Dynamics Offset Vacations) met us at the airport and took us everywhere," Rode said.

Three other people will see first-hand what Rode experienced. The trio won free trips for two to the Orient at recent offset travel shows presented at San Diego, Electric Boat and Fort Worth. George Brakeall, an Electronics Division retiree, was awarded the prize at San Diego; Gregory Machinski, Ship Senior Superintendent, won at Electric Boat; and Yvonne Long, a guest of a Fort Worth employee, was the winner at Fort Worth.

The offset vacation package to Hong Kong starts at \$799, depending on month traveled, less \$50 discount for General Dynamics employees, retirees and friends. The package includes round-trip airfare on Korean Air from Los Angeles, five nights hotel accommodations, daily American breakfasts and much more.

A variety of tours to Turkey is available throughout the year. The tours introduce travelers to a land rich in history,

art and beauty and are organized and escorted by experts. Tourists can visit Istanbul, one of the world's oldest cities, and its Blue Mosque, St. Sophia and the Topkapi Palace. Cruises are available on the Bosphorus, linking Europe with Asia. In Ephesus, visitors can walk the same marble streets once traveled by St. Paul and visit the shrine where the Virgin Mary spent her last days.

A recent traveler on the "Legendary Turkey" tour, Diana Viktor, said her 15-day trip was too short. "The country was fascinating and full of history, history, history," said Viktor, whose husband, Cary F. Viktor, is Director-International Offset-Capital Projects at the Corporate Office. She emphasized that she's looking forward to a return trip. "The tour was magnificent," she said.

Interest-free tour loans for eligible employees are available through the human resources or travel departments. Further information on General Dynamics Offset Vacations may be obtained from divisional travel offices or from Percival Tours. Percival Tours may be called toll-free at (800) 482-8282 in Texas or (800) 527-8448 in the rest of the United States.

Senior Convair Buyer Cited for Contribution To Small Businesses

Gregory A. Chapin, a senior buyer for Convair's Procurement department, has received corporate recognition for his contributions to the General Dynamics small business program. In 1985, Chapin made 128 awards representing \$769,029 worth of business to minority-owned or small, disadvantaged businesses (known as DSBs). In 1986 he awarded \$1.2 million of business to DSBs. Chapin pledged to award \$2 million in the first half of 1987 and had already awarded approximately \$1,803,767 at the end of April.



"As a buyer, Greg is an excellent Convair contact **Chapin** for small suppliers seeking to do business with the company," said Russell N. Babcock, Division Vice President-Procurement. "He helps assess a small firm's ability to compete and establishes the rapport necessary for a productive business relationship." Buyers must evaluate DSBs on the basis of workmanship, product quality, performance, delivery and price, Babcock said.

As a government contractor, General Dynamics makes a commitment to award contracts to DSBs. Convair finds DSBs through areawide conferences, workshops and trade shows attended by members of the Convair Small Business Department. Convair is also a member of the Small Business Development Council, which is another source of contacts. The company also receives referrals on DSBs from government agencies and other companies. In many cases, the small business will initiate contact with Convair.

"We are fortunate to have so many fine DSBs to do business with," said Chapin, "especially in the Advanced Programs area where reliability and quality are a must." In the past, doing business with a DSB was often seen as "giving them a break," Chapin said. "Now DSBs can perform well on any level and with any product."

Savings and Stock Investment Plans

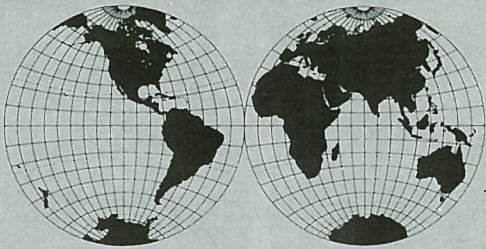
	Annual Rate of Return for the 12 Month Period Ending:		
	April 1985	April 1986	April 1987
Salaried			
Government Bonds	11.6%	16.2%	6.5%
Diversified Portfolio	25.1%	39.6%	28.6%
Fixed Income	12.5%	12.2%	11.9%
Hourly			
Government Bonds	11.6%	15.6%	6.8%
Diversified Portfolio	24.6%	39.9%	30.2%
Fixed Income*	N/A	12.3%	11.8%
GD Stock Closing Price	\$66.62	\$79.37	\$64.00

* Fixed Income effective 6/30/85

Fort Worth Honored For Cost Reduction

A special award for Productivity Achievements and Cost Reduction was presented to Fort Worth recently by the Air Force Contract Management Division, which is headquartered at Kirtland AFB, N.M.

Charles A. Anderson, Vice President and Fort Worth General Manager, accepted the award from Gen. Bernie Weiss on behalf of the division at a ceremony in Albuquerque. The award recognizes the division's performance in the Material and Subcontract category in 1986.



Around the World

CHQ: Christopher R. Schildz joined as News & Information Specialist . . . David A. Lange as Senior Communications Specialist . . . Glenda J. Minor as Supervising Senior Auditor . . . Lee F. Hudson as Corporate Manager-Omaha Office . . . Dana P. Dorsey as Senior Auditor . . . Elizabeth A. Rentfrow transferred from Space Systems and was promoted to Payroll & Employee Benefits Accounting Chief . . . Thaddius C. Bankhead transferred from Convair and was promoted to Corporate Manager Financial Planning & Control-Washington Office . . . M. Ellen Herre transferred from Fort Worth and was promoted to Corporate Manager-FAR Compliance . . . Rachelle E. Adrian transferred from Convair and was promoted to Auditor . . . Wilma L. LaBatte was promoted to Corporate Security Administrator-Washington Office.

Fort Worth: Lane Everett was appointed to Director of Electronic Products Business Management . . . Chester A. Hardy, David Shockey, Celestino R. Sierra Jr. and Gordon Smith to Program Director . . . Timothy E. Almaroad was promoted to Quality Control Engineering Specialist . . . E.J. Beaird Jr. to Project Tool Engineer . . . Cynthia J. Booker to Senior Manufacturing Technology Engineer . . . Henry Borbolla Jr. to F-16 Programs Manager . . . Charles D. Brightwell and Calvin J. Prince to Project Manager . . . George E. Calloway Jr. to Senior Logistics Engineer . . . William V. Carpenter Jr. to Project Coordinator . . . Roy E. Cherry Jr. to Contracts Manager . . . Bobby J. Cross, Douglas J. Nadon and Patricia L. Sutherland to Field Service Engineer . . . William L. Daniels to Tool Manufacturing General Foreman . . . James D. Everette to Production Specialist . . . Marvin G. Fain to Production Management Manager . . . William R. Fuller Jr. to Engineering Chief . . . Thomas L. Guess to Material Programs Administrator . . . William A. Guinn, Maynard K. Johnson and William J. Moran to Engineering Program Manager . . . Gary D. Haltom and Robert W. McAnally to Senior Project Engineer . . . Ross M. Hatch to Logistics Specialist . . . J.Q. Keesee to Project Engineer . . . Mark L. Lagrone to Logistics Group Engineer . . . Jimmy E. Lawson to Material Planning Supervisor . . . Marion M. Nelson to Field Operations Manager . . . Larry D. Phelan to Field Operations Supervisor . . . Ronald R. Redpath to Finance Chief . . . Gary W. Satz to Logistics Engineer . . . Altha M. Stewart to Senior Tool Engineer . . . Keith E. Thompson to Purchasing Agent . . . Ronnie Weaver to Material Planning Chief . . . Jonathan J. Whittington to Inspection Supervisor.

Electric Boat: John J. Morales was promoted to Superintendent . . . Donald D. Rowley to Assistant Superintendent . . . Jackson E. Morgan and Hubert G. Sokolski to Engineering Manager . . . William B. Juhneciz to Engineering Chief . . . James P. Hammel to Material Systems Chief . . . Gregory R. Teifert to Assistant Program Manager-New Facilities Construction . . . George A. Ballassi, Frederick F. Hughes, Donald D. Jordan, Terry T. Loewenberg and Steven D. Sondak to Engineering Supervisor . . . Peter P. Piascik to Senior Plant Protection Supervisor . . . Gerard G. Kelly to Design Supervisor . . . Robert R. Gent and Thomas E. Schelling to Trade Planning Supervisor . . . David I. Arundel to Logistics Supervisor . . . David D. Weber to Material Planning Supervisor . . . Orlando O. Fasano, Keith K. Noyes and Robert R. Pisz to Technical Services Supervisor . . . Brenda L. Wiltout to Admin/Control Supervisor . . . David D. Medeiros to Mail Services Supervisor . . . Curtis C. Anderson, Gary G. Howells and Albert A. Whipple to General Foreman . . . John F. Lang to General Foreman-Radiography . . . John J. Angell, Richard R. Brooks, Charles M. Green, William Greenwood, Leon Griffin, John W. Joseph, Robert B. Kearns, Larry J. Kloiber and Anthony A. Sturgis to Foreman . . . Norman Carlson to Project Control Coordinator. At Quonset Point, Stephen E. Cavanaugh to Foreman III . . . Robert D. Russell, John M. Shedlock and John H. Weiss to Foreman II . . . Rick R. Ogren and Mark M. Walaska to Senior Packaging Administrator. At Charleston site, John C. Kopka to Manufacturing Engineering Manager. At Idaho site, Benjamin B. Gillis Jr. to Engineering Supervisor . . . Brad B. Schrader to Rad Con Shift Supervisor. At Kesselring site, Douglas J. Bowers to Assistant Superintendent . . . Richard G. Mosher to Chief Test Engineer . . . Alton L. Clapper to Assistant Chief Refueling Engineer . . . James T. Henley to Assistant Chief Nuclear Test Engineer . . . David R. Piper to Rad Con Training Supervisor . . . Jeanne F. Holmgren to Admin/Control Coordinator.

Electronics: Robert D. Bowen was appointed to Tactical Systems Programs Director . . . Cuong M. Vu was promoted to Engineer . . . Richard A. Farmer to Marketing Manager . . . Eugene E. O'Donovan to Project Manager . . . Rolando G. Valda to Associate Engineer . . . Michael D. Fox, Gilbert Garcia, Artemis Kolas and Garvin T. Nowell Jr. to Quality Assurance Supervisor . . . Sharon S. Keane to Quality Assurance Section Head . . . Gilbert E. Aguilar, Frank E. Berger Jr., Albert A. Lafferty and John F. Valade to Estimating Administrator . . . Glenn E. Denton to Engineering Section Head . . . Taylor J. Greene and Michiel A. Rickman to Engineering Administration Section Head . . . Lindsay R. Fong to Senior Management Systems Analyst . . . Richard C. Wassman to Operations Manager . . . Ronald J. Baker to Plant Engineer Analyst.

Convair: Michael J. Coronado has been promoted to Quality Assurance Supervisor . . . Paul Ostermann to Group Engineer.

Space Systems: James K. Ball was promoted to Program Manager . . . Susan D. Gillingham and Barbara A. Oliver to Administrative Chief . . . Patrick J. Lenarz to Operations Project Administrator . . . Michael S. Refermat to Finance Chief.

Land Systems: Frank E. Aldridge was promoted to Financial Specialist . . . Spence C. Wilson to Material Planning Supervisor . . . Harold W. Quackenbush to Engineering Program Chief . . . Adam Kazarian to Material Planning Specialist . . . Joseph A. Floyd to Material Planning & Control Supervisor . . . James L. Rippetoe to Quality Assurance Specialist . . . Delmer L. Riffe to Administration Coordinator . . . Thomas J. Post to Document Control Supervisor.

Pomona: James R. Barzeele was promoted to Project Engineer . . . Gary L. Britton, Carolyn J. Esparza, Jessie L. Huebsch, Karen M. Jackson, Rose H. Matava, Mary V. McClure, Ricky L. McDaniel, Raymond C. Nelson, Russell G. Patrick, Leonard K. Stuessel, Sammie H. Taylor and Laurie J. Twete to Manufacturing Supervisor . . . Richard W. Crawford Jr. to Design Specialist . . . William P. Duncan to Configuration & Data Management Representative . . . Everett E. Hambly III to Senior Design Engineer . . . Charles F. Liesenfelt to Material Acquisition Manager . . . Kathleen McNair to Human Resources Administrator . . . Anita J. O'Brien to Provisioning Representative . . . Roberta J. Watkins to Project Representative . . . Elbert J. Wilkerson Jr. to Material Liaison Representative.

Valley Systems: Gary R. Lingle was promoted to Engineering Manager . . . Stephen R. Paschal to Group Engineer.

Data Systems: At Western Center, Alan E. Novak was promoted to Pomona Site Manager . . . John W. Brown to Camden Site Manager . . . Linda J. Buhrig to Space Systems Site Manager. At Central Center, Robert D. Schlappé and Paul J. Boatman to Engineering Software Chief . . . Jeffery L. Brandon and James J. Tamulevicz to Engineering Software Supervisor.

GDSC: William A. Rummel was promoted to Sales and Marketing Manager . . . Kenneth N. Randles to Accounting and Budgets Manager . . . Tony E. Madison to Program Administration Supervisor . . . Thomas P. Riley and Lisa A. Welker to Senior Proposal Analyst . . . Larry G. Haynes and Kenneth F. Quinn to Airborne Systems Operator . . . Robert E. Bergstrom to Quality Assurance Specialist . . . Judy O. White to Accounting Analyst.

GENERAL DYNAMICS

World

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Important Financial Matters Discussed. Key finance executives from the company's divisions, subsidiaries and the Corporate Office met near St. Louis recently to consider financial matters and competitiveness in the defense industry. Among the speakers from outside and inside the company were Gary Shilling, President of A. Gary Shilling & Company (left photo), and Standley H. Hoch, Executive Vice President-Finance (right photo).

Company Hosts Conference on Finance and Competitiveness By David A. Lange

Key financial executives from throughout General Dynamics gathered recently for the first corporatewide meeting organized to discuss finance issues in the defense industry.

The theme of the General Dynamics Finance Conference was "Meeting the Challenges," and speakers from inside and outside the corporation told of ways to do that. Their audience consisted of 116 finance executives from General Dynamics divisions, subsidiaries and the Corporate Office who traveled to Innsbrook, Mo., a meeting center near St. Louis, for the three-day conference.

The meeting was organized to meet three objectives: to reinforce teamwork among members of the corporation's finance organization; to discuss initiatives to enhance competitiveness; and to define challenges and opportunities facing the corporation and the defense industry.

Speakers from outside the corporation included Harvey Kapnick, Chairman, President and Chief Operating Officer of Chicago Pacific Corporation and a member of

the General Dynamics Board of Directors. Kapnick gave an outside director's view of the role of finance in the corporation. Another of the outside speakers, Eldon Crowell, Senior Partner in the Washington, D.C., law firm of Crowell & Moring, talked about the evolving regulatory environment facing the industry. Gary Shilling, consultant to General Dynamics and President of A. Gary Shilling & Company, addressed the economics of the defense industry and the impact on General Dynamics.

President Oliver C. Boileau and Executive Vice President-Finance Standley H. Hoch were among speakers from General Dynamics.

Hoch, who gave opening and closing remarks, mapped out the corporation's long-range goal. "Our analysis has shown that in the past 17 years only one in five commercial diversification attempts by a major defense contractor was even marginally successful," Hoch said. "We have concluded that for now and the foreseeable future, we will concentrate our efforts on maintaining and improving our

premier position in defense and aerospace."

Boileau talked about competitiveness, one of the key financial issues facing the corporation.

"The first thing we need to do is recognize the problem, and the problem is that the defense procurement environment has changed," Boileau told the audience. "The defense contractors who recognize this change and respond to this change will prosper. The contractors that don't will face some severe problems."

Noting that General Dynamics has lost some recent contract competitions, Boileau said, "We must undertake a companywide effort to reduce our costs and increase our cost effectiveness. We must work very hard to reduce our costs, and we must do it now."

Boileau's topic was one of 12 covered by 17 speakers at the conference. "I was very impressed with the issues we discussed and the speakers who talked about them," Boileau said. "These are things our people need to know."

Ferrier Says Agents Who Steal U.S. Secrets Are Likely to Be Americans

Despite the development of increasingly sophisticated technical methods of collecting intelligence, the human agent continues to be the most important means of espionage, according to William I. Ferrier, Corporate Director of Security.

"And the agents who steal most of the U.S. classified information lost through human espionage," Ferrier said, "are not foreign nationals but Americans already employed in sensitive positions. They are recruited, or often volunteer, to provide information to hostile intelligence services."

Ferrier said employees are being informed about the details of human espionage through the company's Security Awareness Program.

"Social occasions and situations are a favorite hunting ground for Soviet Bloc intelligence officers, such as diplomats or United Nations employees, on the lookout for

potential recruits," Ferrier said. "So are restaurants, bars and clubs in the vicinity of defense contractor facilities."

The most common inducement in recruiting agents is financial gain, Ferrier said, and recruits often couple this with conscious or unconscious anger at the employer.

"The most dangerous agents of all, who account for the greatest losses of the most highly classified information," Ferrier said, "are not those who are laboriously recruited, but those who walk in the door of a Soviet embassy somewhere and volunteer information for sale."

"For the 'walk-in,' as for the recruited agent, the motivating factors are usually greed or indebtedness, plus an additional element of grievance or disgruntlement," Ferrier said. "The individual usually is dissatisfied with his or her job or harbors some grudge against the employer."

Ferrier said the following characteristic signs may betray an agent at work:

- Attempts to obtain information where there is no "need to know" and excessive curiosity about what others are doing,

- Unauthorized removal of classified or company proprietary material from work areas or introduction of cameras or recorders into work areas,

- Repeated overtime or unusual work hours not required by the job, and

- Unexplained affluence.

"In many cases," Ferrier said, "it is difficult to distinguish the spy from an exceptionally hard worker, but suspicious activities, combined with job dissatisfaction or other disgruntlement, certainly provide grounds for heightened attention to an individual's actions."

"Such vigilance is required by defense contractors because the human agent continues to be the most important key to satisfying a nation's intelligence needs," Ferrier said.

Tactical Air Command Wing at Moody AFB, Ga., Gets Its First F-16

The U.S. Air Force's 347th Tactical Fighter Wing officially accepted its first F-16 aircraft during a recent ceremony at Moody AFB, Ga.

The flight line ceremony was highlighted by F-16 and F-4 Phantom flyovers and an F-16 air show performed by a pilot from the 363rd TFW, Shaw AFB, S.C.

Moody AFB is receiving three squadrons of F-16A/B aircraft to replace F-4s used at the base for the past 12 years.

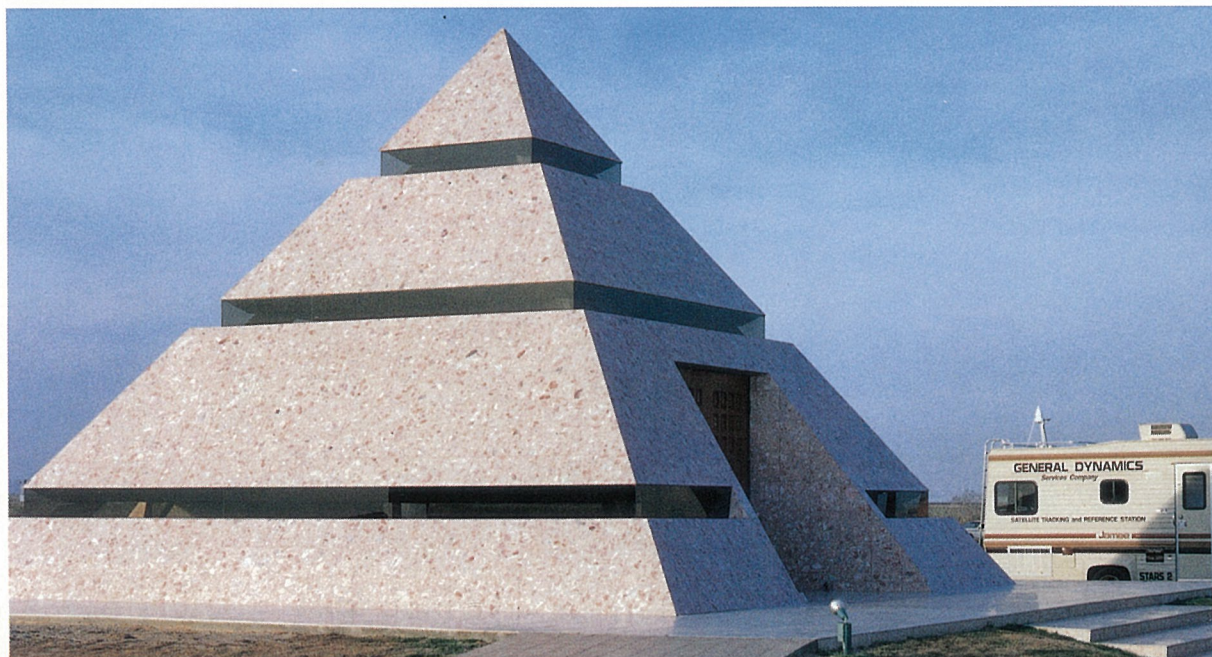
Lt. Col. Jim Kula, Commander of the 68th Tactical Fighter Squadron, taxied the base's first F-16 to the ceremony area and presented it to the 347th Wing's maintenance and operations commanders, who in turn presented it to Col. David Oakes, Wing Commander.

"This event marks the beginning of a new era," Colonel Oakes said. "The F-16 is the Air Force's most advanced tactical fighter, and we are proud to welcome it to South Georgia."

Moody is the last base in the USAF's Tactical Air Command, which includes the active duty fighter units based in the continental United States, that is scheduled to receive F-16s until the early 1990s. Air National Guard and overseas units will be activated sooner.



New USAF F-16 Units. F-16s of the 347th Tactical Fighter Wing, Moody AFB, Ga., fly over cypress trees in Banks Lake near the base. F-16A/B aircraft are replacing F-4s in three tactical fighter squadrons at Moody.



World's Center Surveyed. General Dynamics Services Company personnel demonstrated the Satellite Tracking and Reference Station (STARS) capability (housed in van in background) by performing a geodetic survey of a pyramid called the "Center of the World" near Yuma, Ariz. The survey yielded the precise coordinates of a six-inch disc in the structure's floor. Vern A. Ross, GDSC Yuma Field Office Operations and Marketing, is shown in photo at right at the computer console inside the STARS van.

GDSC Space Technology Used to Survey 'Center of the World' By Julie C. Andrews

A space-age technology demonstration by General Dynamics Services Company (GDSC) Yuma Field Office employees was part of a unique community fund-raising event recently that will help preserve frontier history in the southwestern desert along the California-Arizona border.

A GDSC Satellite Tracking and Reference System (STARS) mobile unit located the precise geodetic points of Felicity, Calif., a tiny community several miles west of Yuma, dubbed the "Center of the World" by its founder Jacques Istel, an entrepreneur who is promoting tourism in the Yuma area.

In exchange for the survey, done at no charge, Istel made a donation in the name of General Dynamics to the Yuma Crossing Park, a historical restoration project actively supported by several GDSC employees in the community, including Vern A. Ross, Yuma Crossing Board member. Istel decided to make the survey an

"event" by linking it to a fund-raising dinner for the same project.

On the day of the survey, Ross drove the STARS van to the site. The STARS ground units work in concert with the Navstar Global Positioning System (GPS), a space-based radio navigation network. There are currently six operational satellites, which were all launched by the Space Systems-built Atlas rocket.

General Dynamics has been deeply involved with the testing, data analysis and integration of GPS receivers into aircraft and ground vehicles. GDSC is actively marketing its STARS capability to provide position, time and velocity data and for testing integration of the GPS into military or commercial vehicles. The STARS units are capable of providing ground support worldwide with accuracy of three to five meters over extended areas, thereby reducing the need for expensive development and

implementation of ground-based equipment.

To do the survey, Ross began tracking the six Navstar satellites late in the afternoon from inside the STARS 2 unit parked near a 19-foot-high marble pyramid that marks Istel's "Center of the World." A GPS receiver tracked the signals from the six satellites currently in orbit. A separate computer simultaneously performed the calculations that eventually gave Ross the geodetic points of the pyramid. Through further refinements in the calculations, Ross later pinpointed the coordinates down to a six-inch disk in the floor of the pyramid.

During the fund-raiser, Ross also conducted demonstrations of the STARS mobile unit for guests, which included many community leaders from both sides of the Colorado River, the natural boundary between California and Arizona.

Employee Long-Distance Walking Raises Funds for March of Dimes

Employees from Fort Worth and the Abilene Facility recently participated in long-distance walking events in their areas to raise money to support the March of Dimes in its fight to prevent birth defects.

At Fort Worth, about 20 employees and family members represented the company as they covered an 18.6-mile course in the TeamWalk event in their city. Megan Perry, a staff member from the division's recreation association facility, served as team captain. The participants wore blue F-16 T-shirts that made them readily identifiable as associates of General Dynamics.

TeamWalk was held the day after approximately 200 division employees and members of their families had worked as volunteers at the Area II Special Olympics.

At Abilene, 53 employees and 19 family members walked more than 620 total miles in the March of Dimes' Walk-America event. The Abilene representatives raised \$3,727 of the almost \$17,000 that was raised during the walk. General Dynamics was recognized for raising the most money and having the largest number of participants. Uta Taylor, Senior Machine Center Operator, was recognized as the person raising the most money, a total of \$1,070.

The General Dynamics participants wore red T-shirts designed by William G. Chambers, Nondestructive Testing Inspector.



Walk-America Honors. Abilene Facility employees and family members pose with trophy presented to the facility for having the most participants in the March of Dimes Walk-America event in Abilene, Texas.

The success of the company's involvement in such activities as TeamWalk, Walk-America and the Special Olympics results from the selflessness of the individuals

who participate, said Norman B. Robbins, Manager of Community Relations at Fort Worth.

Community Services Association at Electric Boat to Donate \$875,350

The Electric Boat Community Services Association will donate \$875,350 this year to more than 50 organizations, primarily in Connecticut and Rhode Island.

Of the total, \$535,000 will go to the United Way of Southeastern Connecticut and its 36 member agencies, another \$130,350 will go to United Ways that serve 16 Electric Boat locations outside of Connecticut, and another \$210,000 will benefit 34 other health and service organizations.

In four years, the Community Services Association has increased contributions from \$576,000 to this year's total. "The Community Services Association gives employees an opportunity to contribute to many worthwhile agencies," said James C. Burbank, association President. "Our underlying philosophy is that we want our funds to assist people who need help either for health or economic

reasons."

The association donates money to organizations that serve Electric Boat employees, which is why most of the money goes to agencies in Connecticut and Rhode Island. Because Electric Boat has facilities in Washington, Florida, New York, Georgia and Idaho, the Community Services Association also makes donations to organizations in these areas.

More than 14,000 employees at Electric Boat make contributions to the fund through weekly payroll deductions. The fund is administered by a board of eight union and four company representatives. Many of the 50 agencies benefiting from the fund receive money to buy specific items, such as a restaurant stove for the Trinity Mission-New London Soup Kitchen. An agency can also apply funds at its discretion, to the Hospice of Southeast-

ern Connecticut, which provides home health care to terminally ill patients.

The association also makes donations to A Child's Wish Come True, a group helping to fulfill the wishes of terminally ill children. "The association's administration committee passed a resolution to make up any shortfall of up to \$600 in a fund-raising effort for any terminally ill child of an EB employee who is being sponsored by a Child's Wish Come True," Burbank said.

Providing money toward day care for children of Electric Boat employees, and especially of single parents, is another worthwhile endeavor. This year the association will contribute \$23,000 to day care services offered at the YWCA of Southeastern Connecticut on Thames Street, Groton. The money offsets the full cost of enrolling children in the program.

Air Show Near Ankara, Turkey, Was the Site of a Surprise Reunion By Alvin A. Spivak

When U.S. Air Force Capt. Jeffrey B. Rochelle stepped out of the F-16A Fighting Falcon he had flown to an air show near Ankara, Turkey, in late April, he saw a familiar face he hadn't seen for 12 years. It belonged to W.B. (Zim) Zimmerman, Fort Worth Division F-16 program director for Turkey, and it registered pleasant surprise.

They had met only once before, in 1975, when Jeff Rochelle was 15 years old and the son of a U.S. Air Force squadron commander at the Bentwaters Royal Air Force Base in England. A prototype F-16 had been flown there on a Western European tour following its debut at the Paris Air Show.

One of the pilots, then Lt. Col. James G. Rider, gave Jeff a photo autographed, "To a future fighter pilot, Jeff Rochelle." Another, Lt. Col. M.B. (Duke) Johnston, joined Rider in describing the joys of jockeying a fighter plane. Rider and Johnston alternated with Neil Anderson, then Chief Test Pilot for General Dynamics, in flying the tour. Zimmerman was in charge of logistics.

(Rider and Johnston, retired from the Air Force, are now at Fort Worth, Rider as Project Engineer for F-16 International Models and Versions, and Johnston as Director, Pilot-Vehicle Interface.)

"Zim told me he was an aeronautical engineer, and I ought to think of following that career if I was interested in aviation," Rochelle recalled during an interval while showing his F-16 on static display at the International Defense Equipment and Avionics (IDEA '87) exhibition in Turkey.

"Until that day in 1975, I had no intention of getting into aviation or of joining the Air Force," Rochelle said. "My dad was a fighter pilot but he didn't steer me in that direction. He wanted me to make my own choices. What really inspired me were my talks with Lieutenant Colonel Rider and Lieutenant Colonel Johnston and with Zim Zimmerman — and seeing the F-16 in action."

After completing high school in England, Rochelle enrolled at the University of Southern California, majoring in aeronautical engineering. A year later, he was accepted by the Air Force Academy and was graduated in 1982, after which he went into flight training. At the head of his class, he was given a choice of aircraft to fly, and he chose the F-16.

In August 1984, Rochelle was assigned to the 612th Tactical Fighter Squadron at Torrejon, Spain. Planes from



Surprise Reunion. Air Force Capt. Jeffrey B. Rochelle and W.B. (Zim) Zimmerman stand beside the F-16A Rochelle flew to Turkish defense exhibition. They met 12 years earlier when Rochelle, a teenager in England, first saw an F-16 and Zimmerman helped inspire his future career.

that base are deployed routinely for training in Turkey, and that was where Rochelle was when his squadron commander designated him to fly to the exhibition outside Ankara. His job was to show the F-16 to Turkish citizens whose government had decided to purchase 160 of the planes.

"I was in the group that greeted the aircraft," said Zimmerman, who was attending IDEA '87 as head of a General Dynamics team manning an F-16/Cessna exhibit. "I wondered why the pilot walked straight over to me

when he got out of the plane."

Rochelle, now 27 years old, said he asked Zimmerman if he had been to Bentwaters in 1975 and Zimmerman affirmed that he had.

"I told him I remembered him," Rochelle said, "and that he and Rider and Johnston had inspired me to do the things I've done in the last 12 years. Our 1975 meeting flashed back into Zim's memory, and he just stood there for a moment and looked proud."

Recent AFTI Tests Leading to Future Use of Combat Automation

(Continued from Page 1)

tractor for the program, which is exploring how new technologies can be combined to increase the effectiveness of pilots and airplanes.

AFTI/F-16 aircraft modifications have been completed at Fort Worth, and the major flight testing under the program has taken place at Edwards AFB, Calif.

The AMAS testing began in July 1984. It evaluated technologies designed to help the aircraft maneuver automatically throughout an attack on a target. Pilot control inputs are not required with AMAS, allowing the pilot to focus full attention on acquiring and destroying the target and avoiding enemy threats.

Phase II consisted of more than 347 hours and 237 missions of AMAS evaluation, Waddoups said.

Fail-safe ground collision avoidance protection, functioning through 360 degrees of roll, was another technology demonstrated in the program. Pilots tested the

capability aggressively, flying at up to 600 mph, banking 180 degrees and pulling 5.5gs toward the ground.

Colonel Ross said the ground collision avoidance system worked very well. "It was used in virtually every flight for Phase II, since that system was what allowed pilots to get down to 200 feet to do their bombing," he said.

The system included an automatic recovery maneuver that would take control of the aircraft and fly it to safety anytime the aircraft made a potentially unsafe dive. This maneuver would help a pilot if he became disoriented or lost consciousness, according to information released by the Air Force.

In addition, test pilots demonstrated single-seat operation of a multiple sensor avionics suite during low altitude maneuvering attack profiles. The avionics suite helped the pilot find his target and then cued the sensor-tracker system to it. In the past, this type of operation has typically required two crew members — one to fly the airplane and one to find the target.

Colonel Ross said single-seat operation of the sensor suite was possible only because it was fully integrated with the automatic flight controls, which steered the aircraft while the pilot found and locked on to his target during the bombing and attack tests.

"We were able to aim weapons with a conformally mounted target tracker with minimal impact to aircraft performance or agility," Colonel Ross said. "In addition, we demonstrated real-time weapon fusing during curvilinear delivery of cluster bomb munitions." Real-time weapon fusing allows the bombing system to set fuse parameters in tactical munitions dispensers and bomb pods just before the weapons are dropped off the aircraft.

Interactive voice communication between the pilot and a fully integrated digital avionics were other technologies demonstrated with the AFTI/F-16 during Phase II. Voice communication allows the pilot to use his voice to enter data, select displays, operate sensors and select weapons.

In addition, airborne storage, processing and display of large areas of Defense Mapping Agency digital terrain and feature data were demonstrated. The aircraft used a Digital Terrain Management and Display System that aids pilots by providing tactical situation awareness, navigation and fire control.

Autonomous terrain correlation navigation was also achieved using Sandia Inertial Terrain-Aided Navigation (SITAN) computer software, providing the pilot automatic navigation accurate to within 160 feet in rugged terrain. SITAN is 10 times more accurate at keeping an aircraft on course than standard inertial navigation systems. The computer system with SITAN keeps automatic track of the aircraft's location by comparing its digital terrain data base against the terrain over which it flies, further reducing pilot workload.

Maj. Mark Steubben, Director of the AFTI/F-16 Test Force at Edwards AFB, was the pilot for the final flight in Phase II. The flight lasted about an hour and tested air-to-ground weapons delivery performance, voice interactive avionics and the SITAN software.

AFTI Phase I flight tests, conducted in 1982 and 1983, evaluated decoupled modes of flight made possible by the airplane's digital flight control system, Waddoups said. Phase I included aviation firsts such as turning the aircraft in flight without banking.



Advanced Technology Integration Aircraft (AFTI/F-16) on a Test Flight from Edwards AFB, Calif.

Working and Living Overseas for GDIC Employees Is Never Dull By John R. Lopez

This is the third in a series of articles on the experiences of General Dynamics employees and families, living and working abroad, on foreign assignment.

General Dynamics International Corporation (GDIC) currently operates nine overseas field offices throughout the world. These offices are manned by GDIC Marketing personnel on long-term assignments.

GDIC Marketing personnel overseas function as key members in General Dynamics' corporate "team marketing" concept. The division marketing representatives and corporate team members work together toward one common goal: to promote and sell General Dynamics products in the international marketplace. Although the divisions take the lead in marketing their products internationally, GDIC Marketing personnel advise and assist the divisions in making these sales.

For a better understanding of how GDIC field offices function, three typical field office locations — Brussels, Belgium; Islamabad, Pakistan, and Seoul, Korea — are highlighted in this article.

The Brussels office is the largest of the GDIC field offices. The Brussels staff includes O.(Oats) Schwarzenberger, Corporate Director-Europe; M. C. (Mike) Wasielewski and W.A. (Bill) Houtz. Both Wasielewski and Houtz are Corporate Marketing Managers-Europe. The Brussels staff is responsible for international marketing activity in Europe/Scandinavia, Turkey and Israel.

On some overseas assignments, the employee works on one program at one location. This assignment gives the employee a certain amount of stability on the job and some semblance of a normal home life overseas. International Marketing personnel, on the other hand, must be familiar with the entire line of General Dynamics products and must help market them in several countries. The growing competition from foreign and U.S. companies for the shrinking international market will increase the demand on GDIC personnel to market products more aggressively in the future.

Although working conditions may be somewhat similar, family life differs at the three selected locations. Both Schwarzenberger and Houtz have their families in Brussels. Mrs. Barbara Schwarzenberger divides her time between living in Brussels and visiting their grown children in the U.S.

The Schwarzenbergers live in a 12th-floor furnished apartment about four miles, through "intimidating traffic," from the office. Mrs. Schwarzenberger said, "Life in Brussels can be exhilarating and frustrating. The Belgian people are warm and friendly and eager to make us feel at home. However, the appliances and utilities can make life frustrating. Electric and water service are often unpredictable."

Mrs. Schwarzenberger said, "Shopping can be a delightful experience. Although food is available in local shops, the families prefer the adventure of shopping at the 'Arab Market.' Here, you can find all types of food, spices, flowers and just about anything imaginable. Delicious fresh breads are available everywhere."

On rare occasions, the Schwarzenbergers manage to get away for a few days. They like the neighboring countries, but prefer to visit Switzerland.

Bill Houtz and his wife, Susan, have two children, Kristina, 6, and Kristofer, 4. Susan's mother, Joanne Moore, is also in Brussels.

Food is abundant and good but expensive, according to Houtz. "Belgian waffles are the 'absolute most,' and avail-



O. (Oats) Schwarzenberger looks over the surrounding area at the foot of the Matterhorn

able in stands along the streets," he said.

The Houtz children attend the International School in Brussels. Mrs. Houtz is involved in activities at the International Baptist Church, which she and the family attend. "Our congregation is quite unusual," she said. "We have more than 40 nationalities in attendance."

Mrs. Houtz stays active as an aerobics instructor and fitness consultant at the American Women's Club in Brussels. On weekends, the Houtz family enjoys seeing the sights in and around Brussels.

In contrast, there were many challenges of "setting up shop" in Pakistan, a country rich in the Eastern and Islamic cultures. Corporate Marketing Manager J.L. (Jack) Munsey was assigned to Pakistan in October 1986. His mission was to open a GDIC office in Islamabad, the capital of Pakistan. For Munsey, it was somewhat of a homecoming as he had spent 1981 to 1983 in the U.S. Embassy there as the Senior U.S. Army Advisor.

Munsey and his wife, Melissa, have two daughters, Jillian, 6, and Elise, 3. "Things were quite grim at first," said Munsey. "There we were, living in a local hotel for two months — my wife, myself, two daughters, and a cat."

Islamabad, a city of 250,000 people, has a climate similar to central California. The official languages of Pakistan are Urdu and English. A country of 93,000,000 people, Pakistan is bordered by India on the east, Iran on the west, and Afghanistan on the north. Although Munsey and his family try to keep a low profile, there are constant threats to safety — border skirmishes with India, bombings and air strikes along the Afghanistan border, ethnic riots in Karachi and the ever-present threat of airplane hijackings.

Munsey recounted his experiences in opening the local office. "Seemingly routine tasks, such as obtaining work permits, an office license, office space, office staff, a company car, etc., can become major obstacles in Pakistan," he stated. "Unlike in the U.S., empty office

space in Pakistan is really EMPTY! There are no dividing walls, light fixtures, toilets, window blinds, phone lines and only limited electrical circuits."

"U.S. foodstuffs like American cheese, peanut butter and pork are just not available here," Munsey said. "Imported items from other countries are very expensive. However, the fruits and seafood are very good, and reasonably priced. As for the meats, quality is fair to poor. Local cuisine is heavily seasoned with curry."

"Entertainment is very limited," Munsey said. "We manage by exchanging VCR tapes with other U.S. residents."

Mrs. Munsey stays busy with school activities, shopping and running the household. She is a member of the school board for the International School of Islamabad and also is active as a member of the American Wives Club and Military Mission Wives Club.

"Homes are very large and drafty and have limited utilities. Shopping is a daily chore," she said. "Because food is not packaged or preserved, we buy only what we need each day."

The experience of GDIC's Korean representative, Larry Fournier, is slightly different. "When I first arrived in Seoul, Korea," Fournier said, "I received quite an unusual welcome. I was advised by Korean immigration officials that I could either leave the country or go to jail. After lengthy discussions, I learned that what I assumed was a proper visa for taking up a new post in Korea was not the correct one."

"However," he added, "the experience with immigration was not typical of Koreans. In general, the Korean people are very friendly and eager to make friends with Americans."

Fournier was assigned as Corporate Marketing Manager-Korea/Taiwan last April after a three-year tour as the GDIC country manager in Taipei, Taiwan. Fournier's new assignment was a result of a GDIC initiative to reduce operating costs by combining the overseas offices in Korea and Taiwan under one marketing manager. Fournier's extensive experience in the Far East helped him prepare for this challenging assignment.

Fournier and his wife, Helene, have a two-year-old daughter, Lian. Because of the new assignment, Fournier has moved his home base from Taiwan to Korea and is living in a small suburb of Seoul about 10 minutes from his office.

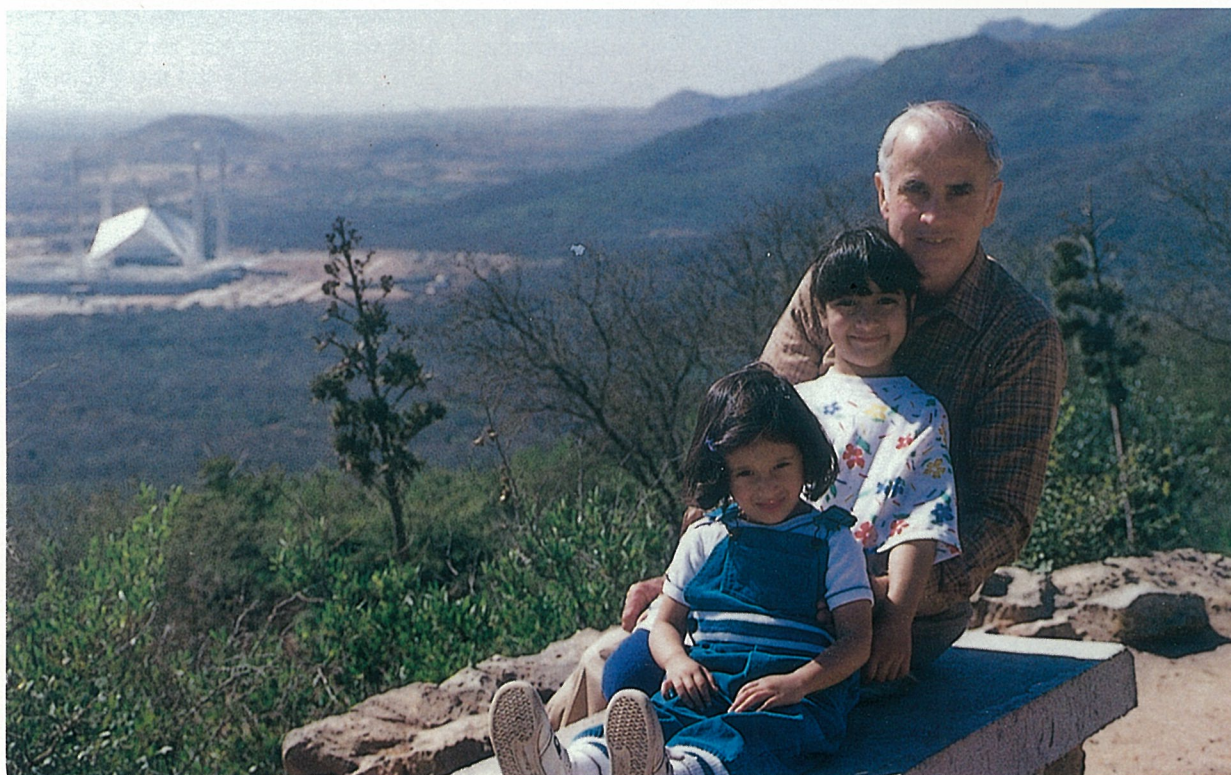
The Fourniers feel that life in Korea is relatively safe. They also had these observations about food, housing and transportation in their new home country.

"Many foods available in the U.S. are also available in Seoul," he said. "Among the unusual ones not common in the U.S. is 'kimchi' — a peppery-hot fermented cabbage, radish or vegetable pickled in salt brine and fermented underground in stone jars."

"The most popular dish with foreigners," Fournier said, "is 'Bulbogi' — sliced beef roasted on a charcoal burner right on the dinner table — delicious!"

Housing and furnishings are somewhat comparable to those in the United States. Homes are heated by hot water flowing through copper pipes in the floor. "Great when you step out of bed on a cold morning," Fournier said.

Fournier summarized the life of a GDIC marketing representative as offering a variety of challenges, experiences and opportunities. "Overseas marketing assignments are not for the homebodies or the fainthearted," he said. "You have to pursue the business opportunities when they arise — often not at your personal convenience."



View in Pakistan. J.L. (Jack) Munsey and his daughters, Elise, 3, and Jillian, 6, enjoy the view from the Margala Hills overlooking Islamabad, the capital of Pakistan. In the background can be seen the new Fazal Mosque, the world's largest mosque.

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JULY 87

Company Will Build 18 Atlas/Centaurs In Commercial Program

The company announced June 15th that the Space Systems Division will build 18 Atlas/Centaur launch vehicles under a company-funded program. This represents one of the largest single commercial space commitments in the industry.

"We fully intend to remain as the leader in the commercial launch vehicle business," said Dr. Alan M. Lovelace, Space Systems General Manager, during a press conference at the 1987 Paris Air Show.

"Our company has played a key role in the space program since its inception, and we are dedicated to continuing and supporting our country's preeminence in space, both commercially and militarily," Lovelace said.

Several customers have already made reservations for commercial Atlas/Centaur launches, which will begin in 1989. However, many of the 18 launch vehicles in the company's first commercial production lot are still available, with launch openings in 1989 through 1992. Under the commercial Atlas/Centaur program, customers are able to purchase the vehicles and launch services directly from General Dynamics.

The Atlas/Centaur launch vehicles will be built at Space Systems in San Diego, Calif., and launched from U.S. Government facilities at Cape Canaveral, Fla. General Dynamics will use the launch facilities under a commercial launch services agreement with NASA. The company is also working with the U.S. Government to further increase the existing operational launch resources for Atlas/Centaur at Cape Canaveral.

The commercial space transportation enterprise represents a financial commitment by General Dynamics in new technologies to reduce Atlas/Centaur production and launch costs. The company is marketing these vehicles to commercial and government customers worldwide. It is offering a comprehensive launch services package that includes a provision for a guaranteed reflight at no additional cost in the event of a launch vehicle failure.

Lovelace said that volume production of Atlas and Centaur will result in lower costs and enable General Dynamics to offer these launch vehicles to commercial customers at competitive prices. "Additionally, it will directly benefit the country in terms of job creation and will help to alleviate a critical shortfall in U.S. space launch capabilities," he said.

The General Dynamics Commercial Atlas/Centaur team is made up of Pratt & Whitney Division of United Technologies Corporation, manufacturer of the Centaur engines; Rocketdyne Division of Rockwell International, manufacturer of the Atlas engines; and Honeywell and Teledyne, manufacturers of the Centaur avionics equipment.

Agreement Is Signed With Indonesian Firm For F-16 Components

General Dynamics and Indonesian Aircraft Industries (IPTN) have signed an agreement implementing the first phase of an offset coproduction package associated with the Republic of Indonesia's purchase of 12 F-16A/B Fighting Falcons.

The agreement was signed for IPTN by Dr. B. J. Habibie, President and Director of the state-owned company and Indonesian Minister of Research and Technology, and for General Dynamics by President Oliver C. Boileau. The signing took place at the General Dynamics Business Center at the Paris Air Show.

The overall agreement for the coproduction of F-16 components and technology transfer provides for offset credits of 35 percent of the flyaway costs of the aircraft. The total components to be produced include 450 forward engine access doors, 975 wing flaperons, 450 fuel pylons, 675 weapon pylons, 526 main landing gear doors and 400 graphite epoxy vertical fin skins.

Company, Four Officials Are Fully Exonerated

ree executives at Valley Systems Division have returned to their regular posts at the division after being cleared in a federal mischarging case involving the DIVAD program.

The Justice Department on June 19th dropped charges against General Dynamics, Ralph E. Hawes, David L. McPherson and James C. Hansen of Valley Systems and James M. Beggs, former General Dynamics Executive Vice President and former Administrator of the National Aeronautics and Space Administration.

In an executive memorandum of July 8th by Chairman Stanley C. Pace, Hawes was reinstated as Corporate Vice

President and General Manager, McPherson was reinstated as Division Vice President-Research and Engineering, and Hansen was reinstated as Director of Program Administration-Stinger. The men took leaves of absence when the indictment was returned in December 1985.

Pace said that John E. McSweeney, who had been serving as General Manager-Valley Systems, would return to his previous position of Corporate Vice President and General Manager-Convair, and Michael Keel, who had been Acting General Manager-Convair, would return to his previous position of Division Vice President and Program Director-Cruise Missiles.



Delivery Celebration. Rear Adm. George Meinig Jr. gives the keynote address at the Pomona plant as the division delivers its 500th Phalanx weapon system to the U.S. Navy. Admiral Meinig is the Assistant Deputy Commander for Anti-air/Surface Warfare at the Naval Systems Command and a former Phalanx program manager.

Phalanx Is Called 'Most Effective, Best Tested;' Navy and Company Praised for the Team Effort

More than 1,000 Pomona Division employees, honored guests and area media heard Phalanx praised as the "most effective, most tested, best tested defensive system in the world today."

The remarks were made by Rear Adm. George Meinig Jr. in his address at ceremonies marking the delivery of the 500th Phalanx gun system to the U.S. Navy on June 26th. Admiral Meinig is Assistant Deputy Commander for Anti-air/Surface Warfare at Naval Sea Systems Command and former Phalanx program manager.

Admiral Meinig said Phalanx responded to the Navy challenge for a weapon system that would "find and kill each valid threat" while at the same time compete for limited defense dollars. He cited Navy and General Dynamics teamwork for designing, engineering, building and testing a quality weapon that has "measured up to

every single challenge put to it. It is a team effort representing the finest that this country can produce."

The admiral urged Phalanx employees to continue their superlative efforts "because in your hands lies the safety of many thousands of sailors in all of the oceans and seas of the world."

Vice President and Pomona General Manager Sterling V. Starr was host for the event. He also recognized the outstanding team effort that includes suppliers, employees, the Navy and others who support the effort to be sure Phalanx is fully capable of operating when and where needed. "In this world of realities," Starr said, "our Navy's defenses must be the best. It is a constant challenge to produce the best, and our Phalanx team is meeting that

(Continued on Page 2)

Electronics Division and Radio Firm in Israel Form Team for Army Communication System

Electronics Division and Tadiran Ltd. of Israel have announced a teaming agreement to compete for the second-source production of the U.S. Army's Single Channel Ground and Airborne Radio System (SINCGARS) program.

In making the announcement, Melville R. Barlow, General Manager of the Electronics Division, and Yigal Ne'eman, President and Chief Executive Officer of Tadiran, said the highly dedicated team will give this vital U.S. Army program its top priority.

"We have established a very experienced team that has broad background in tactical military communications systems as well as strong program management, systems integration and production of high quality and reliable military electronics products," Barlow said.

Ne'eman said that SINCGARS is the most important program in the Tadiran business portfolio. "Our teaming with General Dynamics underscores both the synergy between the two companies and the common commitment of each to this very important program," he said.

Tadiran's CNR 900 tactical radio will be used as the

baseline for system design. Electronics Division will incorporate Tempest and communication security devices into the system to meet U.S. military security standards.

The General Dynamics/Tadiran team will submit its proposal to the U.S. Army Communications-Electronics Command, Fort Monmouth, N.J., the SINCGARS procurement agency. A selection for contract award is anticipated in February 1988. The winning contractor will produce 150 units for operational tests plus an initial production quantity of 400 of the SINCGARS receiver-transmitters. The U.S. Army has a requirement for more than 265,000 SINCGARS tactical radio communications systems.

Electronics Division is a leader in the design and production of high technology defense electronics systems. Tadiran is one of the world's leaders in tactical communication systems and a major provider of tactical radios to the U.S. Army. Tadiran's range of communication equipment is one of the most comprehensive available from a single manufacturer.

Phalanx Is Praised As the Most Effective Defensive System

(Continued from Page 1)

challenge."

Capt. William E. Major, Commander of Pomona's Naval Plant Representative's Office, accepted the 500th Phalanx on behalf of the Navy. It will be installed aboard the USS *Denver*, an amphibious transport dock (LPD-9).

Guests included local government and civic officials, key suppliers and former employees. Key suppliers met the day before to discuss quality, schedule and competitive costs. Phalanx has nearly 300,000 separate parts. Of these, the purchased materials represent 60 percent of the dollars spent.

Local media, including Los Angeles regional television, covered the event. Prior to the ceremony, there was a special press conference with Starr and Admiral Meinig responding to questions about the system and its deployment. The press then toured the Phalanx assembly line. Special permission was granted by the Navy to permit media photography in the plant that day.

Other highlights of the celebration were a buffet luncheon for nearly 200 invited guests including foreign military personnel and music by the Pomona City Concert Band. The band accompanied Pomona employee Miles Augustine who sang the national anthem as a Marine Corps color guard paraded the colors. Throughout the ceremony, Virginia Anderson, an American Sign Language consultant, translated the remarks for the hearing-impaired. Guests and employees were treated to cake and an array of buttons and posters following the event. The posters featured the Phalanx 500 logo surrounded by signatures of more than 400 members of the Phalanx team.

Number 500 is a success story of a system that nearly did not get built. In 1966, the Navy asked American industry to develop a shipboard "last-ditch" defense system against antiship missiles. At the time, there was a rapid Soviet buildup, an Israeli destroyer was sunk by a cruise missile during the 1967 six-day war, and Navy vessels were operating off the coast of North Vietnam in an increasingly hostile environment.

Four companies responded to the Navy's request, although General Dynamics was not a bidder. But none offered the required combination of performance, weight, deck space, availability and deployment schedule.

In the meantime, Pomona engineers were developing a concept for a closed-loop fire control system. Research revealed that it was feasible to track a stream of bullets from a gun as well as the incoming target.

Three years later, in 1969, Pomona submitted an unsolicited proposal, based on this concept, using the innovative fire control system with an off-the-shelf gun. During the next two years, the closed-loop technology was demonstrated, and in 1974 a prototype was installed aboard the USS *King*.

Additional tests performed over the next three years verified reliability and lethality, and in 1977 the initial production contract was signed. Production began the next year, and in 1979 the first Phalanx was delivered to the Navy.

Fort Worth Deliveries of 30 F-16s Last Month Merit Congratulatory Message from Chairman

Fort Worth delivered 30 F-16s in June, the most ever in a single month.

Stanley C. Pace, General Dynamics Chairman and Chief Executive Officer, described the record number of deliveries as "great!" in a congratulatory message he sent to Vice President and Fort Worth General Manager Charles A. Anderson.

Charles N. White, Division Vice President-Production, said, "The delivery of 30 F-16s in one month could only have been accomplished by a united effort from the entire manufacturing organization. In June of 1986, we delivered 15 aircraft. Doubling the number of deliveries in a 12-month time span meant overcoming many serious obstacles."

"We have every reason to be extremely proud of the men and women on the production line who worked together as a team to achieve this significant accomplishment," White said.

At the end of June, a total of 1,831 aircraft had been

delivered worldwide since the first production F-16 rolled off the Fort Worth assembly line late in 1978. The Fokker plant delivered one aircraft in June, bringing the worldwide total for the month to 31.

The most worldwide deliveries ever in a single month were 33 in October 1981 when Fort Worth delivered 21 aircraft and the two factories in Europe delivered 12.

The division's June deliveries marked several F-16 program milestones: the last of 40 F-16C/D aircraft produced for Egypt was delivered, six F-16Ns were delivered to the U.S. Navy, and the first F-16C equipped with the upgraded Pratt & Whitney engine — the F100-PW-220 — was delivered to a U.S. unit. The F-16C with the F100-PW-220 engine will be flown by the 944th Tactical Fighter Group at Luke AFB, Ariz., which is scheduled to be activated with Fighting Falcons later this year.

The F100-220 powered F-16C, which went to Luke AFB, is also the first airplane to be delivered to a reserve unit directly from the factory.



Paperless Factory. Technicians and assemblers at Convair in San Diego are using a "paperless factory" system that replaces up to 90 percent of manufacturing paperwork in the Tomahawk cruise missile final assembly area. Accessing the system through bar codes, assemblers receive instructions at their work-station computers. The system maintains configuration control and is being adapted to other factory areas to maintain high quality and reduce the cost of manufacturing. Convair produces the Tomahawk cruise missile for the U.S. Navy and the U.S. Air Force.

Students Who Need Special Help Get It from Fort Worth Employees

Employees at Fort Worth have been making a substantial contribution to students attending the Metro Opportunity School, an alternative campus of the Fort Worth Independent School District (ISD), which offers an education to students who are not successful in a regular school setting.

Some of the students attending Metro have been placed on long-term suspensions, have poor attendance records, are behind academically or have other adjustment difficulties. "The alternative school setting allows for more personal interaction between the professional staff and students due to a small teacher-to-student ratio," said Norman B. Robbins, Manager of Community Relations at Fort Worth.

The division is involved with Metro through Fort Worth ISD's Adopt-A-School program. Employees provided mathematics and English teaching assistance last school year and assisted the school's science teacher with experiments that reinforced scientific principles, Robbins explained.

"Employees also served as mentors and tutors to selected students," Robbins said. "These one-on-one relationships matched company employees with students who have aptitudes or skills used by the employee in his or her career at General Dynamics."

Students were shown how their particular skills could

be used in career development. In addition, representatives from the division Employment Office and individuals representing various technical skills participated in a "career day" designed to inform students of other career possibilities.

Various employees also participated in a writing project with students, exchanging letters with them on alternate weeks. This was designed to enhance the students' communications skills.

"A large part of the Metro adoption pertained to improving the self-esteem of students," Robbins said. "Academic recognition in the form of acknowledgement by Charles A. Anderson (Vice President and Fort Worth General Manager) was provided to students making the honor roll in a six-week period. In addition, an F-16 memento, such as a tie tac, was provided as a remembrance."

The number of students making Metro's honor roll increased significantly during the school year. Tests of student achievement and proficiency also registered improvement, Robbins said.

An outstanding senior, outstanding student and outstanding composition writer were named from the student body at the end of the school year. All three honorees had been working with Fort Worth employees.

In addition, the number of students who received special awards at the school's graduation assembly showed a positive correlation with the company's adoption, Robbins said. A total of 78 percent of the students working with company mentors received awards, and 62 percent of the total awards went to students who had worked with company mentors.

"While certainly not all of this improvement can be credited to General Dynamics' assistance, it is generally felt that the program had positive benefits for the students and the employees participating," Robbins said.

Anderson has encouraged continued support of Adopt-A-School and similar programs by Fort Worth employees.

Not all of the company's support was related to academics. The school held a spring picnic at Fort Worth's recreation facility. Limited office equipment needs were met during the year. Scientific calculators for math work were provided through the Texas Alliance for Minorities in Engineering, according to Robbins.

Fort Worth's adoption of Metro is expected to be beneficial in encouraging students to begin thinking about their futures and the importance of education, Robbins said. "It has also provided employees a sense of participation in a program that will hopefully result in long-term benefits to the students."

Submarine Helena Delivered to Navy Seven Months Early

The SSN 688 *Los Angeles*-class, fast-attack submarine *Helena* (SSN 725) was delivered to the U.S. Navy by Electric Boat on June 23rd, seven months ahead of contract delivery schedule.

The 360-foot, 6,900-ton submarine is the 17th consecutive ship that Electric Boat has delivered early.

Helena formally joined the fleet during commissioning ceremonies on July 11th at the U.S. Naval Submarine Base at Groton, Conn.

Electric Boat has nine other fast-attack submarines under construction as well as six Trident missile-firing submarines.

FB-111 Unit at Pease Wins 8th Air Force's Golden Bomber Award

Pease AFB's 393rd Bombardment Squadron, which flies Fort Worth-built FB-111s, was recently awarded the 8th Air Force's Golden Bomber Trophy for outstanding bomber crew performance in 1986.

The squadron, one of two in the 509th Bomb Wing at the New Hampshire base, has recorded a number of recent accomplishments. Crews from the unit received high scores in the U.K. Air Meet last year in England and also in the U.S. Air Force's Red Flag exercise.

The 509th Bomb Wing began setting the stage for future achievements in December, when it received its first airplane upgraded with kits designed and supplied by Fort Worth under the FB-111A Avionics Modernization Program (AMP). The wing now has several AMP aircraft.

"The AMP is a major change to the FB-111, and the 393rd squadron is in the forefront to find out how the aircraft can be used," said Capt. Jim McGinley, an FB-111 navigator. "The 393rd pushes ahead and everybody else follows."

Capt. Jeff Olden, a newer 393rd pilot, began flying FB-111s with the unit in January after flying B-52s since 1983. "I like the speed and maneuverability (of the FB-111). You can fly the FB-111 aggressively," he said.

"Now is an exciting time because we're going to get permission to do more (maneuvers) with the aircraft," Captain Olden said. "We're going to be able to try new things and really go out there and fly the aircraft in a more demanding role."

Pizza-Style Cutter, Computer Tape Used To Cut F-16 Parts

Manufacturing Technology engineers at Fort Worth have devised an improved method for rough-cutting graphite-epoxy F-16 components by coupling a pizzeria-style cutter with a computer controlled tape-laying machine.

The setup, dubbed the "pizza cutter," can cut all the way around the edges of uncured, composite F-16 horizontal and vertical stabilizer skins in approximately two minutes per part. "Using conventional manual means — a utility knife and template — the procedure takes approximately one hour per part," said Mason Hayes, the Manufacturing Technology engineer who has been in charge of implementing the cutter into production use.

The cutting technique was envisioned in 1984 as part of a Technology Modernization Program project titled Laminating Center Improvements, according to Jim Shidler, Manufacturing Technology Engineering Specialist. Shidler led the design effort, and the hardware was built in Fort Worth's Production Integration Laboratory. The cutter began production operation in mid-1986.

Other aerospace firms are currently developing similar cutting systems for their composite fabrication operations, but Fort Worth is the first to use such a cutter in production, Shidler said.

The cutting system uses existing automated tape-laying machines to move the cutter along the edge of the component being trimmed. The cutter is mounted on the same machine head that lays graphite-composite tape.

Current & Comment

(Observations on news of interest to the company and the industry will appear regularly in this column.)

* * *

PARIS '87 - GD Test Pilots Kevin Dwyer and Dave Palmer, flying an F-16C powered by the new higher-thrust GE F110 engine, delighted rain-weary crowds at the Paris Air Show with daily dazzling displays of vertical aerobatics. Dwyer and Palmer alternated flight demonstrations that began with a figure "9" followed by a vertical figure "8," and included a "max performance" 360-degree turn while pulling more than 8g's. Dwyer, a U.S. Naval Academy grad (and former classmate of Lt. Col. Oliver North) and Palmer, also an Annapolis graduate, have together accumulated more than 8,000 flight hours. The Fighting Falcon (billed in current company ads as the "Rising Standard in Combat Fighters") was described by Air Force magazine as "the one against which all other fighters that flew were compared."

A two-minute satellite-fed TV newscip on the F-16 at Paris was picked up and aired June 17th-18th by stations in New York, Los Angeles, Fort Worth, St. Louis, Chicago, Detroit, Dayton, Hartford and other U.S. cities.

* * *

TRUST ME - Two days after GD's announcement in Paris that its Space Systems Division would build 18 Atlas/Centaur vehicles (see p. 1), the Soviet Union called a news conference at Le Bourget to pitch its commercial satellite launch capabilities. Soviet officials (embassy construction and intelligence-gathering methodologies notwithstanding) assured prospective customers that U.S. technological secrets would remain intact. They offered a list of six "security guarantees" which exempted western payloads from customs examination, guaranteed escort and control access of all equipment as well as transport to the launch site in a sealed container and promised a general "hands-off" policy by Russian technicians. Outside, meanwhile, air show visitors viewed four Soviet aircraft on static display, each aircraft cordoned off and protected by visibly nervous German Police dogs.

* * *

A MATTER OF PERSPECTIVE - In an environment in which defense contractors are expected to assume higher risks and higher costs, while receiving both delayed and decreased progress payments, it's no surprise to note that some market analysts are predicting a decline of profits for the industry. In spite of this and contrary to evidence that places contractor profit margins well behind other industries, there remains a misperception — nurtured periodically by the media and "watchdog" groups in

Washington and elsewhere — that defense industry profits are excessive and inherently improper. Ironically, both of the major east coast publishing companies which indulge in such continuing criticism enjoyed profits last year which were higher than any of the top ten defense contractors.

* * *

GOOD NEWS - GD Services Company's recent announcement of a new Harlingen, Tex., facility prompted a number of congratulatory and supportive responses from Texas Senators Lloyd Bentsen and Phil Gramm and others. The new aircraft refurbishment facility will be located in a 210,000-square foot building at the Rio Grande Valley International Airport.

Gilbert Leal, President of Texas State Technical Institute, said, "It's like winning the Super Bowl . . . it's not only a matter of jobs, but the fact that our kids will someday be exposed to the kind of high tech jobs we've rarely seen here." Said Senator Gramm: "You know and I know that it's going to be a good marriage between General Dynamics, Harlingen and the Valley."

* * *

TURN ON YOUR HOTLINE - For the first six months of 1987, company Ethics Program offices received some 2,900 ethics related contacts — more than twice those for the same period in 1986. Most sought information, advice or clarifications, while only a fraction actually involved allegations or "whistleblowing." Industry and media skeptics who perceive all Ethics Hotlines as a form of whistleblowing and as implicitly unconscionable would no doubt be surprised by the success of the Ethics Program in providing help. Mark Twain, who was probably not familiar with the term "whistleblower," said it best: "Always do right. This will gratify some people and astonish the rest."

* * *

ON THE WINGS OF A CESSNA - A controversial 19-year-old West German, a defecting high-ranking Cuban military official and a precocious 11-year-old American boy have combined to keep GD's Cessna subsidiary on the front pages of newspapers worldwide. Within hours of the May 28th "stealth" flight into Red Square by Mathias Rust in a Cessna-built 172 Skyhawk, Brig. Gen. Rafael del Pino Diaz, with his wife and three children aboard, flew a Cessna 421 Golden Eagle from Cuba to Key West, Fla. Then, on July 1st, John Kevin Hill completed the Los Angeles to Washington, D.C., flight that he had begun a week earlier in his Cessna 210 Centurion. Hill, who was accompanied by his instructor, is the youngest pilot known to have flown coast to coast.



BY MIKE LANE FOR THE BALTIMORE EVENING SUN

Key Appointments Of Executives Made By Pomona, Cessna

Two executive appointments have been announced by Pomona and the Cessna Aircraft Company.

Joseph F. Muse has been named Division Vice President and Program Director for the Advanced Air-to-Air Missile (AAAM) at Pomona.



Muse



Wakefield

Muse joined Pomona in 1959. He held positions in Engineering and Marketing, including Marketing Director for Navy Programs. In 1978, he transferred to the Electronics Division in San Diego as Division Vice President of Marketing. In 1981, he returned to Pomona as Engineering Program Director for the AAAM system. Muse holds a bachelor's degree in mechanical engineering from Brown University and a master's degree in engineering administration from George Washington University.

Tommie W. Wakefield has been named Subsidiary General Counsel and Assistant Secretary at Cessna Aircraft Company. He previously was Manager, Product Integrity Counsel for Cessna for almost 10 years. He joined the company as Product Integrity Counsel in 1975. Wakefield is responsible for handling all litigation matters and legal activity involving Cessna and its products.

Before joining Cessna, he was an attorney in the Kansas City regional office of the Federal Trade Commission. He is a 1970 graduate of Friends University in Wichita, Kan., where he received a bachelor of arts degree, majoring in political science and history. He earned a law degree in 1972 at Washburn University in Topeka, Kan., and is a member of the Kansas Bar Association.

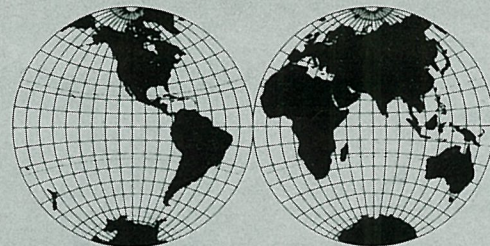
College Junior Wins Scholarship Awarded By General Dynamics

Kevin C. Fitzpatrick, 21, a junior at Northeast Missouri State University, is the first winner of the General Dynamics Journalism Scholarship awarded by the Journalism Foundation of Metropolitan St. Louis.

The scholarship is for \$1,000. It was one of 20 corporate and individually sponsored scholarships awarded this year by the foundation. Robert A. Morris, Corporate Vice President-Communications, presented the award to Fitzpatrick at a dinner honoring the foundation's scholarship winners.



A native of St. Louis, **Fitzpatrick** founded and operates a biweekly newspaper in Kirksville, Mo., home of Northeast Missouri State. He also works as layout editor for the school's newspaper and is a public affairs assistant in the U.S. Marine Corps Reserve.



Around the World

CHQ: Ellen B. Brown was appointed to Corporate Director-Procurement & Acquisition Policy . . . Cheryl M. Geil joined as Associate Auditor . . . Brice G. Jorgensen as Senior Auditor . . . R. Kent Nixon was promoted to Corporate Administrator-Directives Program . . . Andrette Watson to Accounting Administrator.

Fort Worth: Jackie R. Aldridge was promoted to Manufacturing Control Supervisor . . . James M. Aslin to General Foreman . . . Charles C. Baker to Senior Operations Analyst . . . Richard H. Berryman, David N. Butcher, Glendon R. Crump, Gary F. Haas, Frank J. Kutzler, Kenneth D. Mabry and Mark J. Schreiner to Engineering Chief . . . Gus W. Brooks III to Project Coordinator . . . Frederick A. Bruton to Project Engineer . . . David M. Burnette to Subcontract Management Coordinator . . . Charles N. Butler and Johnnie D. Dukes to Engineering Manager . . . Richard T. Chaney to Senior Field Maintenance Specialist . . . Cindy S. Compton to Manufacturing Control General Supervisor . . . Don W. Davis to Quality Assurance Chief . . . Richard A. Denny and Robert W. Taylor to Production Specialist . . . Thomas M. Dunn and Ronald R. Ragan to Inspection Supervisor . . . Robert E. Edwards to Scheduling Specialist . . . Diana S. Fanning, Jimmie C. Priddy and Robert E. Wilson to Engineering Group Supervisor . . . William O. Feild, Benjamin J. Freuhauf, Jeff D. Higginbotham and James G. Jones to Project Manager . . . J.B. Gardner and Charles R. Short to Tooling Design Supervisor . . . Jo L. Gauntt to Superintendent . . . James A. Gerlach and Herschel J. Mitchell to Planning and Controls Chief - F-16 . . . Robert W. Hamilton to Procurement Chief . . . Russell K. Hardisty to Manufacturing Control Supervisor . . . Duane E. Hayley to Manufacturing Support Equipment Chief . . . Bibiana Hoverstadt to Industrial Engineer . . . Billy J. Howard, Robert L. Kinney, Allan B. Manweiler, Joseph A. White and Stephen J. Wright to Assistant Project Engineer . . . James L. Kincaid to Human Resources Analyst . . . Michael R. Lammert to Production Management Specialist . . . Laurie S. McCollum to Senior Program Analyst . . . Keith L. McCormick to Senior Industrial Engineer . . . David W. McKinney to Contract Administrator . . . Kenneth E. Moss to Senior Field Engineer . . . Richard O. Northrup to Foreman . . . Travis G. Nowlin to Material Program Administrator . . . Joseph D. Parker to Field Supply Representative . . . Jimmie D. Plotner to Production Management Specialist . . . James R. Schuster to Manufacturing Engineering Specialist . . . Amanda F. Sumner to Traffic Foreman . . . Kelly E. Thomas to Tooling Supervisor . . . Gary M. Trammell to Management Systems Specialist . . . James W. Vaughn to Logistics Supervisor . . . William J. Wilton Jr. to International Co-Production Chief . . . Michael D. Yust to Principal Field Service Engineer.

Convair: Dennis E. Berglund was promoted to Procurement Supervisor . . . Kathleen A. Crebo to Industrial Engineering Operations Supervisor . . . William G. Dolan Jr. and Jaswant S. Toor to Engineering Chief . . . Markham A. Gates, Gordon D. Lundquist, Gary D. Roeck and Gilbert A. Warila to Group Engineer . . . James V. Greco to Project Engineer . . . Paul E. Willis to Configuration Management Supervisor.

Electric Boat: Johan F. Collasius was promoted to Engineering/Design Services Manager . . . Edward R. Evelyn to Engineering Administration Manager . . . David W. Caswell to Ship Superintendent . . . Edward G. David, Larry R. Williams and Brent Woodward to Engineering Supervisor . . . Kenneth L. Adams to Senior Planning & Material Supervisor . . . George J. Richards to Trade Planning Supervisor . . . Neil A. Gerwig, David M. Hammond, Thomas L. Kelliher, Jeffry D. Matties and Kevin C. McCann to Nuclear Test Supervisor . . . Craig A. Brown to General Foreman . . . Walter K. Algiere, Royal L. Allard, Charles D. Brown, Charles J. Gemmell, William T. Houle, Steven G. Kensel, Gary T. Lewis, James R. Page, Russel A. Perkins, Brian G. Shields, John O. Swanson, Fred M. Vocatura and Benjamin E. Weston to Foreman . . . At Quonset Point, Maurice Cournoyer to Material Planning Chief . . . Calvin E. Fuller to Material Planning Supervisor . . . Fred H. Card and Leigh B. Gardiner to Senior Trade Control Supervisor . . . Phillip Aubin to Senior Packaging Administrator . . . Donna L. Frechette to Environmental Services Administrator . . . Myles J. Lineberry to Foreman III . . . Michael J. Burke, William C. Grandchamp, Kevin Lawley, Roger G. Levallee, Albert J. Moniz, Michael J. Mullaney and Richard W. Shaw to Foreman II . . . At Newport, William J. Pawlik to Configuration Management Supervisor . . . At Kings Bay, David P. French to Material Progressing and Control Supervisor . . . At Idaho, Robert A. Andersen and Leland J. Kuhl to General Foreman . . . Larry D. Harding to Senior Shift Refueling Engineer . . . At Kesselring, Frederick E. Miller to Site Manager-MARF/S8G . . . William M. McEwen and Paul H. Shaffer to Assistant Superintendent . . . Richard Buterbaugh to Education Services Supervisor . . . William C. LeBeau to Material Planning Supervisor . . . George D. Niforos to Trade Planning Supervisor . . . Steven M. Lestage to Rad Con Foreman . . . Louis J. Britton to General Foreman . . . At Charleston, Barry J. Nicholas to Finance/Administration Chief . . . Thomas A. McCants and Leroy F. Nelson to Foreman.

Electronics: Kelly Gunning was promoted to Engineering Section Head . . . Joel Stanner to Purchasing Agent.

Space Systems: Donna A. Clark was promoted to Senior Engineer . . . Kenneth J. Miller Jr. to Operations Administration Chief . . . Larry D. Wadley to Checking Group Engineer.

Pomona: Elizabeth A. Bauer was promoted to Project Representative . . . Thomas J. Murphy, Leonard D. Boortz and George W. White Jr. to Engineering Group Supervisor . . . Michael A. Brost to Assistant Project Engineer . . . Jeffrey A. Hardesty to Material Control Supervisor . . . Charles L. Knox to Manufacturing Engineering Staff Specialist . . . John K. Oberdank to Procurement Coordinator . . . Ronald E. Seibel to Management Systems Specialist . . . Lee A. Tichenor to Senior Manufacturing Engineer . . . Charles G. Wilson to Test Engineer . . . Will H. Barnhart to Procurement Engineer Specialist . . . Terry J. Eberhardt to Senior Configuration and Data Management Analyst . . . Kevin A. Fagerburg to Senior Management Systems Analyst . . . Rick P. Frier to Senior Cost Control Analyst . . . Troy V. Moore Jr. and Ronald A. Wilson to Purchasing Agent . . . Stuart R. White to Senior Security Representative.

Valley Systems: Sidney J. Crabtree was promoted to Senior Project Staff Engineer . . . Alan G. Fabos to Section Head . . . Janet G. Hansen to Systems Support and Procedures Manager . . . Gwen E. Speakes to Estimating Manager.

Land Systems: Norman E. Dilworth was appointed to Contracts Director . . . John W. Magnusson was promoted to Graphics Arts Supervisor . . . Joseph L. Dietz to ILS Manager . . . Lowell A. Gossard to General Foreman . . . Donald R. Pillsbury to Subcontract Administration Chief.

DS: At Western Center, Frank Wilson was promoted to Senior Customer Services Analyst. At Central Center, David R. Richardson to Engineer Software Supervisor . . . John H. Caywood Jr. transferred from Home Office and was promoted to Financial Control Chief. At Eastern Center, Patricia E. Shaughnessy to Project Engineer Supervisor . . . William H. Cook to W. Milton, N.Y. Site Manager . . . Wayne R. Ingersoll to Business Systems Development Chief.

GDSC: George M. McIntosh was promoted to Maintenance and Training Manager . . . Lori A. Haberman-Wilson to Financial Analysis and Planning Manager . . . Scott D. Dance to Senior Data Systems Analyst.

GENERAL DYNAMICS

World

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Manager of Internal Communication: Edward D. Williams

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Cherokees Are Driving Force for Supplier of Parts for M1 Tank By Dave Lange

Phillip D. Wiltfong jokingly says he and his fellow employees at Cherokee Nation Industries, Inc., are "just poor old Indians."

They are hardly that. These "poor old Indians" are the driving force behind a growing company in Stilwell, Okla., that makes, among other things, wire harnesses for M1 Abrams tanks built by Land Systems.

CNI, most of whose employees are Cherokee Indians, is classified by the U.S. Small Business Administration (SBA) as a disadvantaged small business. A disadvantaged small business is defined as a small business owned and controlled by socially and economically disadvantaged individuals such as Native Americans. Thanks in part to a big boost from its work for Land Systems, CNI is a disadvantaged small business that's getting bigger.

Land Systems and CNI have developed a highly beneficial mutual relationship. A four-year, \$30 million contract from Land Systems has enabled CNI to hire 85 additional workers in an area hit hard by unemployment. In return, Land Systems is receiving wire harnesses of the highest quality.

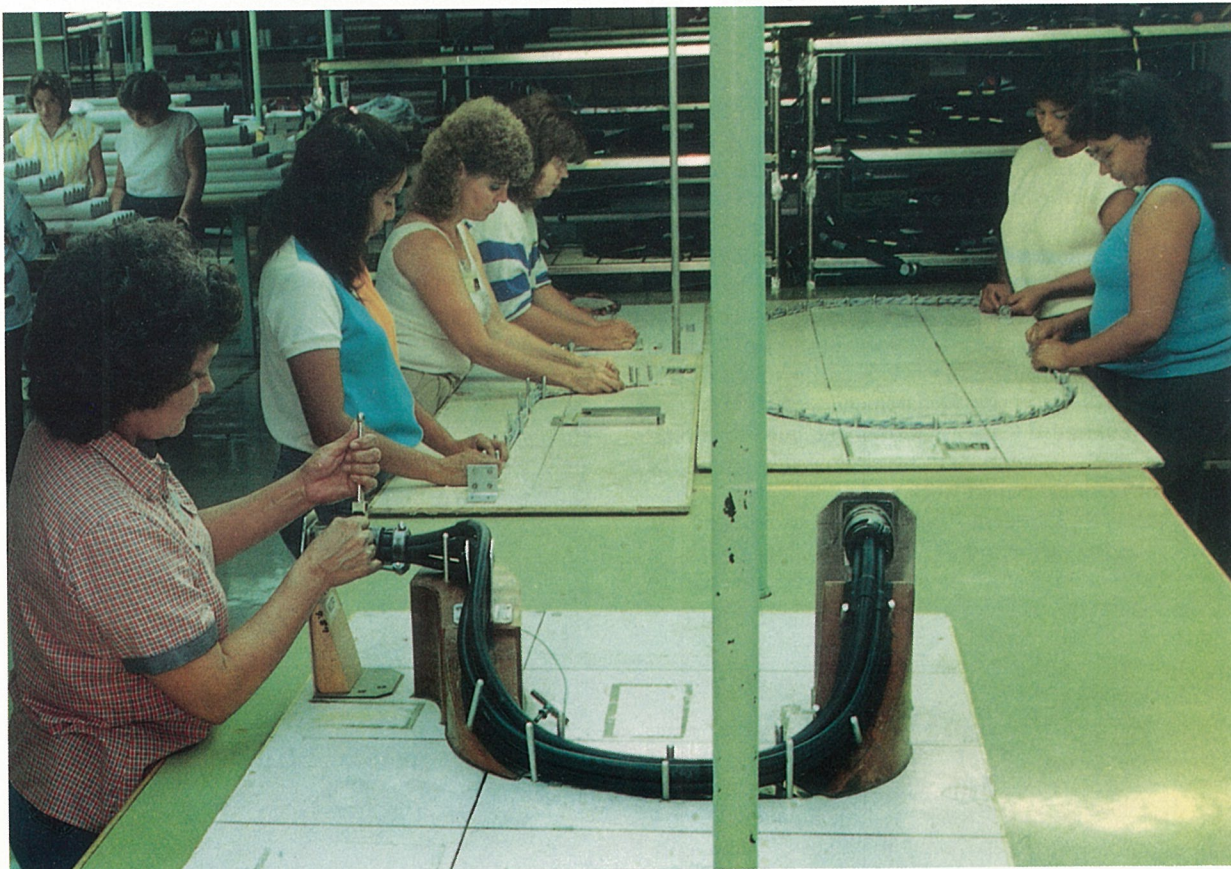
"Cherokee Nation has a current Vendor Quality Rating (VQR) of 200, the highest rating a supplier can achieve under this rating system," said I.N. "Nick" Kunzynskyj, Chief of Major Systems Procurement at Land Systems. "The VQR is a rating that considers timeliness of deliveries as well as Receiving Inspection's acceptance of shipments."

CNI is completing its first year of work for Land Systems, and the quality of that work has been high.

"We're on schedule with Land Systems and we have a perfect quality record," said Wiltfong, Vice President-Marketing at CNI.

The contract competition for M1 wire harnesses included several bigger, well-known candidates. The selection of CNI reflects the strong effort Land Systems demonstrates in expanding its base of disadvantaged small business suppliers. Land Systems contract awards to disadvantaged small businesses increased from \$2.4 million in 1983 to more than \$11 million in 1986, according to regional statistics released by the Defense Logistics Agency. Awards by Land Systems to small businesses owned by women rose from \$800,000 to \$3 million over the same period.

In the Detroit area, home of Land Systems, the division has contracts with more than 20 disadvantaged small businesses. Land Systems has awarded 62.1 percent of its contract dollars to small businesses, well ahead of the Department of Defense's 1987 objective of 46.6 percent.



Land Systems Supplier. Employees at Cherokee Nation Industries, Inc., a supplier for Land Systems, assemble wire harnesses for M1A1 Abrams main battle tanks at the Stilwell, Okla., plant.

The Land Systems contract is the second largest ever received by CNI and represents an important chapter in the company's success story.

W.W. Keeler, then Chief of the Cherokee Nation and Chairman of the Board of Phillips Petroleum, formed CNI in 1969 and located it in the Stilwell area, with hopes of alleviating a staggering unemployment rate that was many times the national average in this region heavily populated by Cherokees.

As the company gradually improved its expertise in making wire harnesses and electronic components for military and commercial use, work came from an increasing number of corporate giants such as Brunswick, Honeywell, IBM, RCA, Western Electric, LTV and General

Dynamics Land Systems Division.

The quality of CNI's work has drawn many awards and much praise. The company has received the SBA's Award for Excellence three years running. Boeing recently named CNI its Small Disadvantaged Business Supplier of the Year. The Army's Armament, Munitions and Chemical Command recently lauded CNI for its delivery of M1 Abrams parts ahead of an accelerated schedule.

Perhaps the biggest benefit of CNI's quality work is the additional Cherokees the company has hired as a result of the increasing number of contracts CNI is receiving. CNI, which reported sales of more than \$21 million in its most recent fiscal year, has 330 workers and is the largest employer in its county.

USA IPM1 Tank Crews Win Top Gun at NATO Competition By Jack Price

U.S. Army crews driving Improved Performance M1 (IPM1) Abrams tanks produced by Land Systems took top gun in the biannual Canadian Army Trophy (CAT) shoot held last month in Grafenwoehr, West Germany.

The winning 1st Platoon, D Company, 4th Battalion, 8th Cavalry, 3rd Armored Division, avoided a near scoring disaster when quick-thinking crews took over the firing assignment of a tank that had a jammed machine gun. Competing on the last day of the meet, the platoon scored 20,490 points out of a possible 22,600 points to overtake a German unit driving the Leopard II.

Twenty-four units from five NATO countries participated.

NATO armor units with tank crews from various coun-

tries, divided into teams from the Northern Army Group and the Central Army Group, meet every two years in the CAT gunnery competition. Scoring involves the number of hits by main armaments and machine guns, speed of engagement and economy of ammunition. The intent is to improve tank gunnery skills of the competing NATO participants and to foster the spirit of camaraderie between NATO team members.

The most intense element of the competition is the honor of being the highest-scoring tank platoon — the top gun for NATO.

Tank crews from all NATO countries had performed well: the Germans in their Leopard I and Leopard II, the Dutch and Belgians also using the Leo, the British with

their Challenger, and the Americans in the M1 and the IPM1, which has a beefed up transmission and is more heavily armored than the M1. But on the last day of the competition, in cold and rain and with a fog hanging over the tank gunnery range, a German platoon held the lead with 19,690 points.

Only some quick thinking during the last firing run boosted 1st Platoon to its victory.

A machine gun jammed on one of the platoon's four tanks while all four fired at simulated infantry targets. But the IPM1s flanking the Abrams with the inoperative machine gun converged and began shooting at the target area of the tank with the jammed gun. By picking up the slack, the neighboring tanks enabled the unit to shoot at all its targets and finish with 800 more points than the second-place Germans.

The IPM1 was the top NATO gun with a maximum of 10,000 points for target hits, 7,565 points for response time — the best time score of all 24 competing platoons — 1,000 bonus points for target hits and conservation of ammunition and a shade under the maximum, 1,925 points, for machine-gun hits.

The platoon maneuver to compensate for the malfunctioning machine gun had pulled it off.

The German crews of Company 4, 124 Panzer Battalion, came in second. The third-place platoon from Company A, 3/64 Armor (US), scored 18,827 points.

Recognition will go to the three top gun platoons and the Canadian Army Trophy will go to the Central Army Group, whose 216,442 total points edged the Northern Army Group's 195,727.

The box score showed that all the scores were close, indicating that all tanks and crews of the NATO armies turned in quality performances.

A. W. "Bill" Carion, Land Systems Vice President and M1 Program Director, represented the division at Grafenwoehr.

"The man and the machine . . . I've always said they have to work together smoothly to get maximum results," he said. "Now I've seen it. I'm proud to have played a little part in making the M1 tank the top gun of 1987, but most of the credit has to go to those Army tankers. They pulled success out of the clutches of potential failure. The M1 made it possible . . . the tank crews made it happen."



Top Gunners. M1 tanks, produced by Land Systems, move out to the firing range for the gunnery competition of the Canadian Army Trophy held recently in Grafenwoehr, West Germany.

Three U. of Okla. Roommates Made a Major Trip West in 1940 By Julie C. Andrews

Walter O. Johnston, Will V. Carter and Jesse L. Trenton believe in togetherness on the job.

More than 46 years ago, the three University of Oklahoma roommates decided to head west together to check out employment opportunities in the burgeoning aircraft industry in Southern California. All three came to work for Consolidated Aircraft, one of the ancestor companies of Convair, on the same day — Sept. 25, 1940. For the last 47 Christmases, the three men and their families, now totaling 37 people, have celebrated the holiday together.

Johnston and Trenton wished Carter well as he retired recently from Convair with 46½ years of service — one of the longest consecutive service records in Convair's Research and Engineering Department.

Trenton preceded Carter in retirement, but Johnston is not quite ready to retire. "I'm psychologically ready," he said, "but I still have good work to do."

Back in 1940, President Franklin D. Roosevelt had just called upon the nation to produce 50,000 airplanes for the war effort. Carter, Johnston and Trenton became part of the great employment surge that saw the number of workers at Consolidated go from 3,160 early in 1940 to 33,000 by the end of 1941 and 45,000 by the summer of 1942.

Their careers have been remarkably stable, considering their decision to go to California was made on the spur of the moment. Trenton was the owner of a new 1940 Mercury convertible. "We threw our belongings in the back seat of Jesse's car and away we went," said Johnston.

They drove to California along old Route 66. Arriving in Los Angeles, they spotted the full-page advertisements in the local newspapers announcing employment opportunities at Consolidated in San Diego.

"We drove down to San Diego on a Saturday," said Johnston. "The line at the employment office stretched about half a mile. Guards were handing out applications through the gate. We got up at 3 o'clock the next morning

to get in line. We were all hired and we all three went to work on the same day."

Trenton started at Consolidated in Welding Inspection. Later he served in the Army, returning afterward to Convair. He went into Estimating and retired as a Materials Estimator in 1982. Carter started in the Experimental Department, then went to Loft and Predesign. He retired in March from the Aerodynamics Department.

Johnston's career began in the B-24 Wing Department, which in 1940 was housed in a tent while buildings at the rapidly expanding Lindbergh Field plant were being constructed. He now works in Structures and Design for Advanced Programs.

Said Carter upon retiring, "The company has been good to me. I never had a good reason to leave. I never met anyone I didn't like, and I always had good bosses."



Retracing Highway 66. Walter O. Johnston, Jesse L. Trenton and Will V. Carter retrace the route they took to California nearly 47 years ago to work at Consolidated Aircraft.

Predictive Maintenance Causes Replacement of 'Good Parts' By Larry Elwell

Electrocardiogram, CAT scan, vibration analysis. Medical diagnostic tools for human ailments? Well, not quite. Just two out of three.

An EKG has been a longtime workhorse detecting heart conditions much as a CAT scan has done the same to probe brain waves. However, no one has ever undergone a vibration analysis.

Vibration analysis is one of the new processes used by the maintenance engineering department at Pomona to prevent machine breakdown and provide better routine maintenance, according to R. N. Burkhart, Maintenance Engineering Supervisor.

Predictive maintenance, as it is known, is the latest method of machine maintenance. It allows parts to be replaced before they break down, thus reducing machine downtime.

"The maintenance system at Pomona for the past two years works to identify a critical wear point, which is the condition a part or machine is in just before it breaks down," said Eugene Craig, Maintenance Engineer.

There are several methods used by the maintenance engineering staff to detect future machine problems.

Vibration analysis is most widely used. It provides the best results in detecting failures in high-speed equipment.

A disturbance analyzer works with sophisticated electrical systems such as mainframe computers to watch for power interruptions or surges, Burkhart said.

Another instrument that has yet to reach its full potential is the infrared system. This equipment detects overheated parts within a system and can be employed in conjunction with vibration analysis.

The staff utilizes another monitoring system that has been used for quite some time. Historical data concerning the breakdown rate of a machine is meticulously kept to provide predictive maintenance information.

The historical data system has proven itself at other companies such as Disneyland, which has used this process to keep elements within the theme park from burning out.

Anyone who has been to Disneyland, walked down Mainstreet USA at night and taken in the hundreds of thousands of lights along the avenue may be hard-pressed to find a single burned-out light bulb. Disney maintenance crews keep accurate files on each light on the street and replace it several hours before it is scheduled to burn out.

Maintenance engineering does much of the same work to keep machines on the production lines from burning out.

Pomona management decided to implement the system

not only to reduce unscheduled machine downtime, but also to improve equipment availability, prolong machine life, improve workload scheduling and improve parts control.

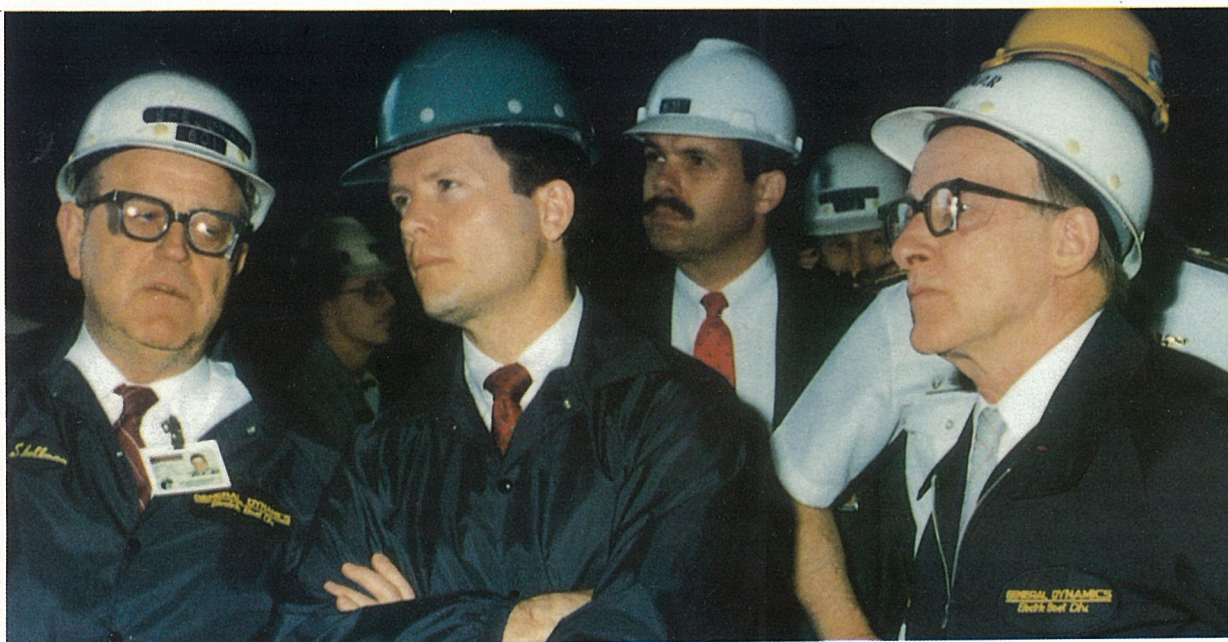
The condition monitoring system has already resulted in substantial savings for the company. The process of monitoring, diagnosing and repairing problem equipment has resulted in savings of almost \$2 million.

Predictive maintenance has also saved defense funds. In the case of a toolmaker lathe, the condition monitoring system determined the machine needed to be completely retrofitted. The maintenance system keeps the machine fully repaired at a savings of about \$40,000 to the Navy.

The program has been implemented at Pomona only. Burkhart said he sees uses for the program corporatewide. "We have made many presentations to other divisions and the future is looking increasingly brighter," Burkhart said.

Burkhart and Craig emphasized that predictive maintenance is not the same as preventative maintenance. "The idea is the same, but, with preventative maintenance, a perfectly good part can be thrown away," Craig said.

"With predictive maintenance we replace a part shortly before the time when we know it will break," Burkhart said.



Navy Secretary Visit. James H. Webb Jr., newly appointed Secretary of the Navy (center, gray hard hat), made his first visit to the Electric Boat shipyard recently. He was escorted by Curtis B. Shellman Jr., Division Vice President-Operations (left, white hard hat); Daniel P. Schmutte, Corporate Director-Submarine Systems (white hard hat, in background); and Fritz G. Tovar, Vice President and Electric Boat General Manager (far right, white hard hat), who pointed out submarine construction techniques developed by Electric Boat.

U.S. Demonstrating Two M1A1 Tanks In Saudi Arabia

The U.S. Government, with the support of Land Systems, is demonstrating the M1A1 tank for the Saudi Arabian land forces in their country through mid-September.

The demonstration, which began in mid-July, includes mobility and gunnery exercises over varying terrain.

Two production tanks were shipped from the Lima Tank Plant to a port in Saudi Arabia. Small teams of personnel from Land Systems and the Army are assisting during the demonstration.

Current plans call for the simultaneous demonstration of the French AMX40, the British Challenger and the Brazilian Osorio.

"This demonstration is seen as a required activity to compete for future Saudi business," said Michael W. Wynne, Land Systems Vice President-Marketing. "With U.S. Government support and approval, we are confident that this investment of resources will lead to sales in the early '90s."

Multinational Team Formed to Compete for Modular Standoff Weapon

General Dynamics has formed a multinational industrial team to compete for the Modular Standoff Weapon (MSOW) program. A Memorandum of Understanding to initiate the program is scheduled to be signed by seven governments.

The seven-nation consortium, led by General Dynamics' Convair Division, includes Brunswick (United States), Dornier GmbH (Federal Republic of Germany), Hunting Engineering Ltd. (United Kingdom), Aerospatiale (France), Agusta (Italy), Garrett (Canada) and INISEL (Spain).

"We believe that we have established an outstanding team that together has the complementing management and technical expertise required in the development of this multinational program," said Brad Beaver, Director of

Cruise Missile Marketing for Convair. Beaver said that the companies in the General Dynamics team have been involved in a number of previous programs related to MSOW technology.

The MSOW program falls within guidelines of the initiative by Senator Sam Nunn, Chairman of the Senate Armed Services Committee, for partnership among NATO nations in weapons system research and development programs.

MSOW is an air-launched missile that could be used against tactical targets such as missile sites and airfields. The word "modular" describes the weapon's ability to accept interchangeable parts — different propulsion modules or munitions modules — to meet changing tactical situations.

The agreement among the seven nations specifies the joint development of three versions of the air-to-ground standoff weapon. These include short-range and long-range systems designed to engage fixed targets, as well as a short-range system to engage mobile armored targets.

Key company roles include General Dynamics for program management and system integration; Brunswick for demonstration/validation risk reduction; Dornier for structural and other design; Hunting for munitions dispenser technology and effectiveness analyses; Aerospatiale for guidance and control requirements; Agusta for airframe/structural design; Garrett for electrical subsystems and software; and INISEL for electrical systems and support equipment.

Pomona Gives Ethics Training to New Hires During Orientation

By Eric M. Solander

All newly hired employees at Pomona are receiving ethics training as part of their three-day orientation.

Roy Harris, Ethics Program Director, said the training is designed to give new employees an overview of the corporate ethics philosophy and how they might apply it in their daily work environment.

At the two-hour training session, Harris and Shirleen Mason, a member of the Human Resources Development staff, present a brief overview of the ethics program, show a video featuring Chairman Stanley C. Pace and then present a case study for discussion. The case study provides a model for working through an ethical problem.

"Even though our new people haven't really been on the job yet, we emphasize that we are working to make ethics awareness a way of life here," Harris said. "We want them to go away knowing that none of us can afford to consider only what is profitable or expedient, without taking into account what is right, ethical and legal. I also want to let them know right up front that the company wants and expects decisions to be made in accordance with the terms of the company's Standards of Business Ethics and Conduct."

Harris explained that many people feel they might be hurt by going to the ethics program administrator if they have a problem. "Employees need to know that they can freely identify, bring forward and discuss questions, problems, complaints, issues and situations in confidence without fear of exposure or retaliation. That's the environment we need to create," he said.

"We ask that people work through their supervisor first, but if they are not comfortable with that or have already done so and are not yet satisfied, we will help — confidentially," Harris said.

An added benefit of contact with an Ethics Program Director is that it puts a name and a face behind the Ethics Hotline. Harris, who attends each orientation, said that even though new people may have difficulty relating to situations, "I want them to go away knowing at least one person outside their work area with whom they can speak on any subject." Harris said that many people who call just need someone to listen.

Ethics training, as part of the new employee orientation,



Ethics Orientation. Roy Harris, Pomona Division Ethics Program Director, explains to new employees that the Ethics Hotline is available for use anytime. Posters with the Hotline number are prominently displayed in work areas and at plant gates.

is a continuation of a program begun a year ago when the division began working with a select group of ethics trainers representing each of the various departments. That group, in turn, conducted extensive ethics training sessions with employees already on board. The new employee orientation also has allowed the division to phase out the ethics trainers' responsibilities.

"Overall, the employee survey showed most people are positive about the ethics program," Harris said. "Interviews with new employees also indicated they found the training valuable. Our goal is to give them some positive steps in dealing with situations that may arise as they learn their work."

Fort Worth 'Store' Supporting Company's Cost-Competitiveness

By Joe Stout

Fort Worth's new "store" for office automation tools shows how innovation can be applied to everyday tasks to achieve productivity and savings benefits, ultimately supporting the company's goal to become a more cost-competitive government contractor.

"The store was established to solve the problem of long cycle times in the procurement of personal computers and related hardware and software, requiring several months of cooperative study and planning by a team of employees representing several departments at the division," said Willie C. Livingston, Division Director of Productivity Programs.

The store concept will provide significant savings in procurement and manpower. "Manpower savings result from the streamlined process as well as the productivity savings throughout the division that result from more timely delivery of tools to users," said Pam J. Carter, Manager of AOS Acquisition and Implementation.

The cycle time for providing new office automation tools through the store is between 30 and 60 days, an 84 percent improvement over the former process, which took six to nine months, Carter said. "It now takes about 17 separate transactions within the division to procure, receive, tag and install a software or hardware item, compared to approximately 50 transactions with the old

process," she said.

With the old procurement procedure, 29 different vendors were supplying workstations, printers, software and other personal computer "piece parts," Carter said. The various parts that were needed to fill a single requirement often arrived at the plant at different times, resulting in a large inventory of items in storage.

"To solve these problems, the team of employees studying the system recommended the creation of a single purchase order that is based on estimated quantities for a year's worth of purchases," Carter said. "A single vendor is used. The purchase order goes through division channels once, instead of hundreds of times as each separate item is requested."

Interested vendors competed for the purchase order. The order requires the selected vendor to handle other computer and software manufacturers' products as well as its own, and to deliver all orders within 10 to 30 days. "So it's up to the vendor to find a source for the goods from its own inventory or from another outside store," Carter explained. "Orders are delivered to the plant as complete systems ready for installation."

The purchase order was awarded to Xerox. Competing vendors were also allowed to bid on the division's computer maintenance contract as part of a total package with the

purchase order, which allowed Fort Worth to get better prices in filling both needs, Carter said. Maintenance contract savings resulted in an additional 11 percent reduction from 1986 baseline costs.

The store system also simplifies tracking orders, since the number of parties involved has been greatly reduced. The store concept uses an on-line order system.

Members of the team that designed and implemented the concept were from division departments that were involved in or affected by the previous procedure. "There was a lot of give and take in coming up with the solution, and all the parties signed an agreement stating that they were satisfied with the changes," Carter said. "In revising the process, we were very careful to set up a system that conforms with existing division Standard Practice instructions for computer purchases."

Approximately 2,000 personal computer items have been processed under the concept since it was implemented early this year, according to Carter.

"The single-vendor approach may eventually be applied to other business processes at the division since it is working so well for personal computer assets. When you're talking about improving productivity and cost competitiveness, you've got to look at everything," Carter said.

Defense Department Changes Requirements For Employee Records

Under a new Department of Defense (DOD) requirement, employment and security records of all employees holding security clearances will automatically be turned over to the Defense Investigative Service (DIS) or other federal investigative agencies.

William I. Ferrier, Corporate Director of Security, said that an automatic review by these agencies is called for in a new paragraph in the DOD's Industrial Security Manual for Safeguarding Classified Information.

"Previous requirements provided only for 'access' to the same information through the company's Human Resources or Security personnel," Ferrier said.

The new requirement refers both to employees already cleared and to those in the process of being cleared.

In order to be in immediate compliance, Ferrier said, General Dynamics is making available all personnel records and medical records of cleared employees, except for medical records deemed confidential under the provisions of voluntary enrollment in company-sponsored employee assistance programs.

"We will follow the new standards for reporting adverse information regarding cleared employees," Ferrier said. "Cleared employee self-enrollment in a company-sponsored rehabilitation program is not reportable, but discovery by the company of alcohol or drug abuse by a cleared employee, or associated criminal conduct, must be reported."

"This policy is intended," Ferrier said, "to provide a balance between the need to assure that a cleared individual cannot use a rehabilitation program as a shield against being reported — and thus prevent a review of his or her eligibility for continued access to classified information. The policy also balances this with the needs of industry to have rehabilitation programs that do not have potentially adverse consequences for enrollment."

Electronics Division Sponsors Conference For Minority Suppliers

Approximately 200 small disadvantaged and minority-owned businesses participated recently in the Small/Small Disadvantaged and Women-Owned Business Procurement Conference held by Electronics Division in San Diego.

The one-day conference included speeches and workshops designed to give the participants insight into ways of doing business with General Dynamics.

According to Betty M. Fleming, Electronics' Small Business Administrator, the division began hosting this annual conference in 1982. Support from and involvement of the business community has grown substantially over the years.

"Most of the participants are local businesses seeking to expand their business base and to learn how to become viable suppliers to General Dynamics," said Fleming. "Our company's business represents a significant portion of the procurement dollars expended each year in San Diego County, as well as in the state of California."

Speakers at this year's meeting included Fleming, the conference organizer; Roger E. Lamberson, Electronics Vice President-Material; and Ed R. Jatzek, Chief Contract Management/Divisional Contracting Officer for the Defense Contract Administration Services.

Singapore Firm Is Named Cessna Distributor in Asia

Cessna Aircraft Company has named Ranlod Aviation Services (Pte.) Ltd. in Singapore to be the distributor of its aircraft in Southeast Asia.

The new company, organized by a group of former employees of Heli Orient, Cessna's former distributor in the region, will be located at Seletar, Singapore's general aviation airport.

Ranlod Aviation Services is the only private company specializing in the sale of general aviation aircraft in Southeast Asia. It will be an authorized sales representative for the entire Cessna product line, including Citation business jet aircraft.



F-111 Unique Markings. FB-111A No. 1, a U.S. Air Force test aircraft based at McClellan AFB, Calif., is shown on a flight near Edwards AFB, Calif. The aircraft has the colorful paint scheme to increase its visibility.

Electronics Division Delivers 8th Zero-Defect F-16 Automatic Test Equipment to Air Force

Electronics Division's F-16 Avionics Intermediate Shop (AIS) Automatic Test Equipment (ATE) team continued its high-quality production with the recent delivery of the eighth zero-defect set of ATE to the U.S. Air Force. The F-16 AIS Automatic Test Equipment team is responsible for the design and manufacture of the four types of test stations that are used by the air forces of 10 nations to test F-16 avionics.

Since the first F-16C/D set of ATE was delivered in December 1984, Electronics has compiled a zero-defect record of 66 percent on 260 stations produced and delivered to date.

"This impressive record is a tribute to the AIS team, which has contributed to the quality of the design and workmanship on the program," said Robert R. Coffman, F-16 AIS Program Director. "This kind of quality will keep our customer happy and help us maintain our competitive edge. It's a real team effort."

Producing a zero-defect set of ATE involves manufacturing the hardware for the four test stations consisting of more than 300,000 parts and utilizing over 700,000 lines

of computer code and associated documentation.

In the Air Force maintenance system, the AIS is located close to the flight line. Trained Air Force technicians use the system to isolate faults and repair avionics units quickly, helping maintain the high mission-capability rate for the F-16. The USAF F-16 fleet averaged a mission capable rate of 89 percent in 1986, the highest of any fighter in the U.S. inventory.

Because the ATE lends itself to major updates in test requirements through technology insertion and software changes, it has generated several derivative applications. Electronics delivered the last of 174 stations for the F-16A/B in October 1984. The F-16C/D stations have enhanced test capability to support the advanced avionics of F-16C/D aircraft, as well as systems on the older F-16A/B versions of the Fighting Falcon.

"We are about at the halfway point in F-16 AIS Automatic Test Equipment production," said Program Manager Kenneth Samples. "Follow-on multiyear programs are projected to carry station production into the mid-1990s."

Four Company Employees Win 1987 Tribute To Women and Industry in San Diego Area



Back left to right: Roberta C. Baade, Space Systems; Elizabeth R. Ford, Convair; Ruth A. Hayward, Electronics. Front, seated: Dotte P. Marshall, Data Systems Division-Western Center

Four General Dynamics women have been honored by the San Diego County YWCA as recipients of the 1987 Tribute to Women and Industry (TWIN) award. Roberta C. Baade of Space Systems, Elizabeth R. Ford of Convair, Ruth A. Hayward of Electronics and Dotte P. Marshall of Data Systems Division-Western Center were nominated by their divisions for their outstanding professional accomplishments.

Baade is Manager of Training and Development at Space Systems. She was honored for coordinating special division training needs, including the 1986 ethics awareness program, and for developing a cohesive division management team through a series of offsite team building and communications sessions.

Ford, Group Supervisor in Manufacturing Engineering, is responsible for manufacturing planning, control and maintenance of product structure. Recently she assisted in a smooth transition to a new computerized planning system called Master Parts List (MPL) and developed procedures for controlling classified hardware.

As Engineering Staff Specialist for Electronics, Hayward researches aircraft and missile radomes, radio-wave imaging systems and methods for detecting buried objects. She has written for many publications and is nationally known for work on the effects of heat on missile guidance.

Data Systems Division-Western Center's Security department is headed by Marshall, who has responsibility for physical, personnel and information security. Marshall was instrumental in establishing the policies, procedures, physical installations and personnel requirements leading to Department of Defense clearance for the Western Center facilities.

General Dynamics in San Diego gives financial support to the TWIN program, and several former TWIN honorees are active in YWCA community programs.

Space Systems, Convair Volunteers Battle Injury to Young Boy

By Julie C. Andrews

Space Systems employee Stephen Gallup and his wife, Judy, have declared war on an enemy that until last November presented a barrier to their son Joseph's normal physical development. That enemy is a midbrain injury that affected Joseph's motor skills.

With the help of some of Gallup's coworkers, who have signed on to help fight the battle, the Gallups feel that victory is in sight.

Last November, the Gallups began an intensive home therapy program for 20-month-old Joseph that requires three adults 12 times a day to provide physical stimulation called "patterning." Realizing they would need a lot of help, they put out the call to coworkers, friends and neighbors to become part of Joseph's therapy team.

In patterning, the three adults gather around Joseph, who lies face down on a specially constructed, padded table. For five minutes, they move his arms, legs and head continuously in the crawling motion. Cheery songs played on a phonograph help set the rhythm and amuse the youngster.

"The object in these patterning sessions is to establish new neural connections so that Joseph can crawl spontaneously," said Gallup. "It's working. He couldn't crawl at all when we began patterning, but at the end of March, his daily crawling distance was up to a half mile."

Gallup is a proposal editor at Space Systems. Two of the volunteer patterners are his coworkers: Elaine Heffernan, a procedure writer for Space Systems Quality Assurance, and Ruth Wenger, a data compositor for Convair's Art and Editorial. Heffernan and Wenger are part of a group of about 40 volunteers, including 10 other General Dynamics employees, who participate in the patterning sessions for an hour a week.

Wenger got involved because she has always liked to work with children. "Steve and Judy have made a big commitment, and I feel I am doing something very worthwhile with my one hour a week by helping out. You might not think you are doing anything big, but I have seen a lot of improvement since I started last January."

Heffernan also said the investment of an hour a week is a small thing to give up for the reward of seeing progress. "What could I do with one hour a week that could possibly be more valuable than helping a child?" she asked.

Patterning is but one part of the program the Gallups participate in under the auspices of the Institutes for the Achievement of Human Potential in Philadelphia. The point of the intensive therapy is that children must learn how to crawl before they can walk.

Judy Gallup, a former Convair employee, is also working with her son to develop reading skills using word

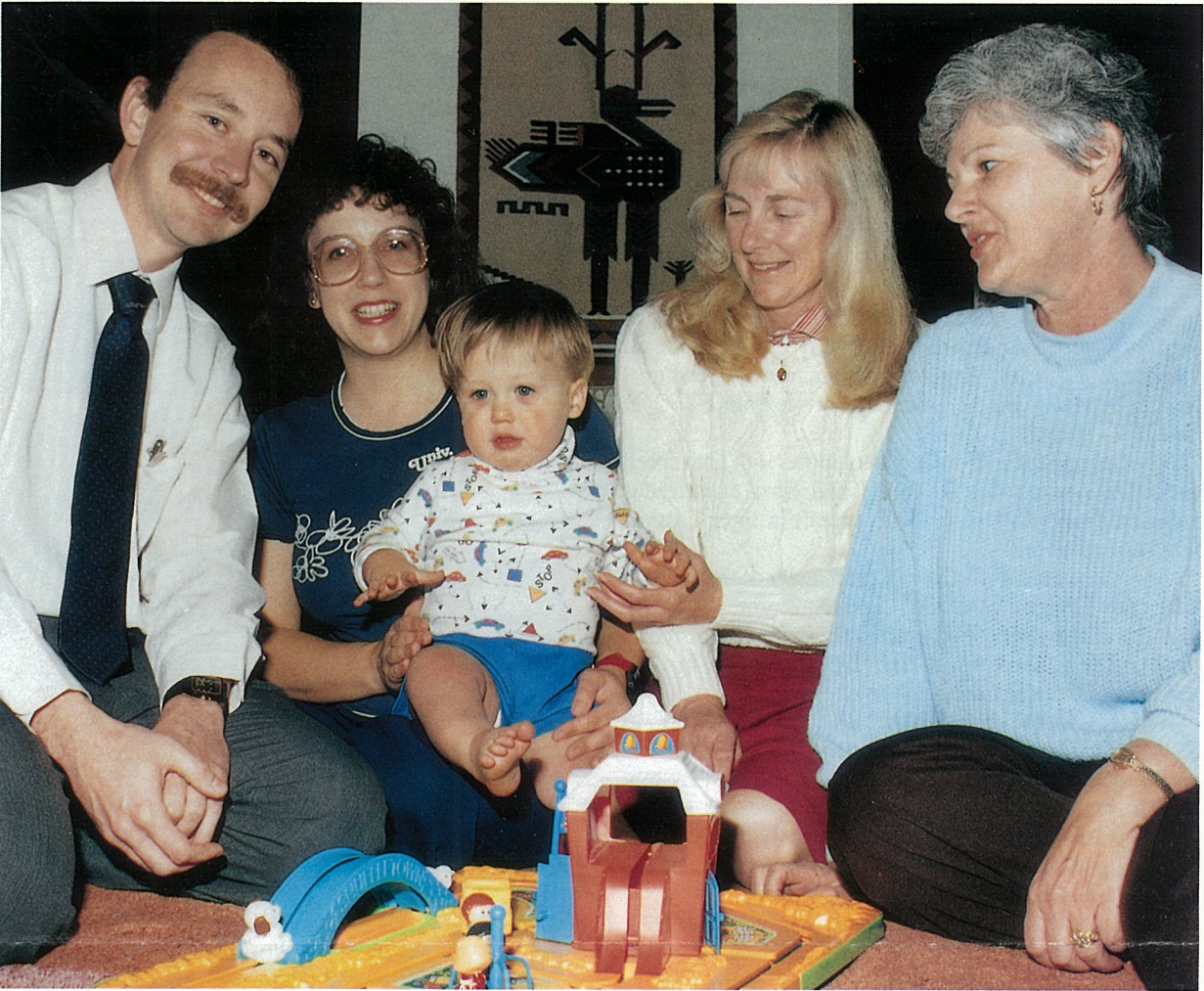
flashcards, and their program has now been expanded to include math and encyclopedic knowledge. This "intelligence program" has been found to improve a child's overall neurological functioning, according to Gallup.

After Joseph achieved his first set of goals in March, the Gallup family traveled to Philadelphia for testing at the Institutes and a new set of goals. Even though Joseph has made good progress, Gallup points out that he still has some catching up to do with his own age group, who now are walking and talking. The next step is walking with the help of an overhead ladder. "By repeatedly walking underneath the length of the ladder and hanging on with his hands, Joseph should walk alone for the first time this

summer," Gallup said.

Judy charts Joseph's "mileage" daily and keeps a detailed schedule for their extended family of volunteers. They constantly celebrate the small "victories" that keep progress going.

"Judy and I refused to accept that nothing could be done for Joseph, as many had told us," said Gallup. "The Institutes' program offered us a solution and a support group of parents with similar kids. We found that brain injury is a fairly common problem. The program is difficult, but we are going full speed ahead. Our goal for Joseph is nothing less than total wellness."



Time to Relax. Joseph Gallup, 22 months old, engages in playtime after a "patterning" session by his parents, Stephen and Judy, and therapy team volunteers Elaine Heffernan and Ruth Wenger.

Fort Worth Couple Uses Exchanges to Promote The Growth of International Friendships

By Joe Stout

After Dorothy Baldwin joined General Dynamics and she and her husband, Frank, relocated from Florida to Texas, they missed their previous association with the Friendship Force, an organization that promotes the development of international friendships.

"The only solution was to form a Fort Worth Friendship Force club and solicit members from our new General Dynamics family," Baldwin said. "The Fort Worth/Metroplex Friendship Force was established in February 1986, and its first international exchange took place this spring when 25 people from Peine, West Germany, spent a week in American homes. We feel now that our effort is begin-

ning to succeed."

The Friendship Force is a private, nonprofit citizen's exchange program that brings people of all ages and backgrounds together to promote better cross-cultural understanding. The international organization has been active since 1977 and currently includes 138 clubs in 48 nations.

Baldwin, Senior Engineering Specialist in Fort Worth's Flight Simulation Laboratory, served as the exchange director for the visit by the West German citizens. "The West German visitors spent the week participating in various group and individual activities which were intended to give the visitors a good look at life in Texas."

The group attended a rodeo in Mesquite, Tex., toured Dallas and Southfork Ranch, and visited a working ranch. "In addition, the individual hosts showed their guests around Fort Worth and shared their daily lives," Baldwin said. "The Germans left with a deeper understanding and appreciation of life in Texas. Many had never been to the U.S. before and primarily knew of Texas from Western movies and television."

In addition to the Baldwins, other General Dynamics families that provided homes for the exchange included those of Sue and Dan Gobel, Edwin and Marilyn Goodman, Rush and Janie Hart, Ann Sherman and Dave and Betty Wesolka.

The Baldwins, who were formerly active in the Orlando Friendship Force, had previously participated in exchanges with Hamburg, West Germany; Carlisle, England; Cardiff, Wales; Bogota, Colombia; and Hamilton, New Zealand. They also traveled to Australia in 1986 with the Austin, Tex., Friendship Force.

The Fort Worth/Metroplex Friendship Force will have its first outbound exchange in August when the club will travel to Kent, England, Baldwin said.

Persons who want more information on Friendship Force clubs can call the organization's headquarters in Atlanta, Ga., at (404) 522-9490.



Exchange Memento. Mathias Spaltenberger, Friendship Force exchange director from Peine, West Germany, presents a commemorative plate to Fort Worth's Dorothy Baldwin.

Atlas 59E Launches U.S. Weather Satellite

A General Dynamics Atlas successfully launched an Air Force Defense Meteorological Satellite Program (DMSP) spacecraft June 19th from Vandenberg AFB, Calif. The 1,815-pound satellite was launched into a near polar orbit by a combined Space Systems and Air Force launch team. This was the third of nine DMSP spacecraft scheduled to be launched on an Atlas E vehicle.

The spacecraft will be used by military weather forecasters to observe weather patterns worldwide. The information is used by all branches of the military, helping commanders plan air, sea and ground operations. It is also used by civilian agencies such as the National Oceanic and Atmospheric Administration.

The Atlas launch vehicle, 59E, was originally manufactured by Convair as an operational intercontinental ballistic missile for the U.S. Air Force in the 1960s. It was modified and refurbished as a space launch vehicle by the Western Space and Missile Center team at Vandenberg. It was delivered to the Air Force Space Division in December 1985.

Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	May 1985	May 1986	May 1987
Salaried			
Government Bonds	15.9%	12.7%	6.9%
Diversified Portfolio	40.8%	38.8%	22.3%
Fixed Income	12.4%	12.2%	11.8%
Hourly			
Government Bonds	16.0%	12.1%	7.1%
Diversified Portfolio	40.4%	39.4%	23.5%
Fixed Income*	N/A	12.2%	11.8%
GD Stock Closing Price	\$71.75	\$79.25	\$64.25

* Fixed Income effective 6/30/85

U.S. Fighter Units in West Germany and Montana Receive F-16s

Two U.S. flying units — one in West Germany and one in the state of Montana — were officially activated with the F-16 in recent weeks.

The 52nd Tactical Fighter Wing at Spangdahlem Air Base, West Germany, celebrated the arrival of its first F-16Cs with a ceremony on July 4th. Spangdahlem is the third U.S. F-16 base in West Germany, joining Hahn Air Base and Ramstein Air Base, and is the fourth in the United States Air Force in Europe (USAFE), including Torrejon Air Base, Spain.

In June, the 120th Fighter Interceptor Group of the Montana Air National Guard marked the arrival of its first F-16s at the unit's Great Falls International Airport base. The 120th FIG is the United States' second F-16 U.S. air defense unit and the sixth Air National Guard F-16 squadron.

While the Montana unit's mission is to protect the air space of the continental United States, the 52nd TFW is expected to be "First In, Last Out" in the event of hostilities in Europe. The Spangdahlem unit's mission is to destroy or force the shutdown of radar-guided surface-to-air missile sites, operating its F-16s in conjunction with F-4G Wild Weasel aircraft that are specially equipped to identify and pinpoint the sites.

The 52nd TFW will be the first unit to have squadrons equipped with two different aircraft types, operating as members of a team. Some of the maintenance personnel in the squadrons will be trained to service both F-16C/D and F-4G aircraft.

The Spangdahlem F-16Cs are equipped with high speed antiradiation missiles (HARM) and Shrike antiradar missiles. They will replace F-4E aircraft in three Tactical Fighter Squadrons.

Brig. Gen. Phillip M. Drew, Commander of the USAF's 65th Air Division, and Col. Jay D. Blume Jr., Commander of the 52nd TFW, praised the flying performance and operational record of the Fighting Falcon in their remarks at the ceremony.

Ted S. Webb, Fort Worth Vice President-F-16 Programs, was the General Dynamics speaker.

The activities were highlighted by two aircraft fly-bys. One formation consisted of F-4G Wild Weasels leading F-4Es, followed by F-16s. In the second fly-by, the F-16s moved up in the formation and filled the slots left by the departing F-4Es.

The Montana Air National Guard unit, the 120th FIG, is replacing Convair-built F-106s with its F-16s, as did the nation's first F-16 air defense unit, the 125th FIG at Jacksonville, Fla.

The aircraft being delivered to Montana came from several U.S. Air Force bases. One airplane, F-16A No. 751, is the last from the deactivated 16th Tactical Fighter Squadron at Hill AFB, Utah. The 16th TFS was the first

operational F-16 unit in the USAF.

The Air National Guard will eventually have 11 squadrons of F-16s dedicated to U.S. air defense as a result of the U.S. Air Force's selection of the F-16 as its new Air Defense Fighter last October.

The Convair-built F-102 Delta Dagger was used in the air defense role prior to the F-106 and Fort Worth-built F-16.

The Montana Air National Guard is sometimes called the "Big Sky" unit.



New Fighting Falcon Units. The latest U.S. units to receive the F-16 are the 120th Fighter Interceptor Group of the Montana Air National Guard and the 52nd Tactical Fighter Wing in West Germany. (Top photo) An F-16A of the Montana Air National Guard flies in formation with one of the group's Convair-built F-106s. (Bottom photo) An F-16C from the 52nd TFW flies near a German castle in the southern part of the country.

Post Production Support Planning Assists in Program 'Success Story'

The success of Fort Worth's F-16 program has often been attributed to the thorough planning that has gone into the program from the earliest aircraft design stage.

The F-16 Post Production Support Planning (PPSP) program upholds this tradition of thoughtful planning with measures which ensure that the Fighting Falcon continues to be a valuable defensive asset long after the last airplane leaves the production line.

The PPSP program was conceived in 1982, after the USAF directed Fort Worth to develop a post production support program at the same time the division was implementing evolutionary aircraft changes that led to F-16C/D versions. "No other defense contractor had ever been asked to develop a post production support program concurrently with the development of a weapons system," said Horace A. Romero, Fort Worth's PPSP Program Manager.

"The program started as the USAF pilot program for the advance planning of post production support," Romero said. "The USAF is expected to require post production support planning for all major weapons systems that it procures in the future," he said.

"Post production support is getting more attention now because defense dollars are diminishing, operation and support costs are rising and technology advances are coming so quickly," Romero said. "The need to analyze the whole-life requirements of a system and to provide for

those requirements before the system has gone out of production has become imperative. One reason for this is that the service life of a major weapons system is much longer now."

PPSP can save the government billions of dollars over the life of the F-16 program by avoiding the huge unit costs that can result when replacement subsystems have to be repurchased — or redesigned — when an economical means for manufacturing them no longer exists. The F-16 will require an estimated \$40 billion in support costs over its lifetime. Even a 5 to 10 percent reduction in costs would result in \$2 billion to \$4 billion in savings.

"PPSP is applicable in cases when a hardware configuration is no longer installed on a current production model aircraft," said John J. Tierney, Director of Logistics Requirements at Fort Worth. "The change in configuration may result from design changes, model changes or part obsolescence. Money can be saved and the availability of parts can be ensured through the cooperation of the government and industry."

In simple terms, the aim of PPSP is to identify potential supply problems and maintain the data and tooling that will be required to produce aircraft components when they are needed in the future. The process is anything but simple, though, considering the complexity of a high technology fighter like the F-16 and the fact that more than 5,000 different suppliers contribute parts and material to

the aircraft.

Fort Worth developed an on-line data system to help manage the flow of information between General Dynamics, the USAF and the many associate contractors. The system provides direct contact to the office of the F-16 Systems Manager at the USAF's Ogden Air Logistics Center in Utah.

"PPSP is also using government data bases for more timely and efficient access to available information for a more accurate analysis of future requirements," Tierney said. "Fort Worth's PPSP group is working with Ogden Air Logistics Center to maintain spares and replacement part availability for the F-16s that are in the field and coming off the production line. This is a contributing factor to the high readiness rates that the USAF is recording for its F-16 fleet."

"The F-16 Post Production Support Planning Program embodies the weapons system support program of the future," said Larry E. Martin, Material Planning/Support Management Chief at Fort Worth.

"The Department of Defense expects a high quality weapons system at the lowest possible cost throughout its life span, and companies that want to be competitive in today's environment must integrate innovative technologies and management tools into their manufacturing and support operations. F-16 PPSP is that kind of program," Martin said.

Land Systems Plants Show Dramatic Gains in Zero-Defect Tanks

U.S. Army deprocessing teams judged 161 M1A1 tanks as having zero defects during the first four months of 1987 — more than five times the 30 zero-defect tanks produced during the same period last year.

The figure also significantly exceeds the 94 zero-defect tanks deprocessed during all of 1986. The 1987 zero-defect

tanks were deprocessed in the United States and Germany.

"Tank plant employees have increasingly demonstrated their commitment to excellence. This new record is a natural outcome of their efforts to reduce inplant defects," said Eric E. Smith, Land Systems Vice President, Quality.

For the 21 months ending December 1986, the average of inplant government write-ups was reduced from 16.4 to 4.4 per tank, and the average of government write-ups in the field at deprocessing was reduced from 9.4 to 4.0 per tank.

Leadership Is the Key Word in Data Systems Division Project Seminars

Recognizing that the effective leadership of projects is one of the most crucial aspects of its business, Data Systems Division (DSD) has instituted Project Leader Seminars through which the division's most promising employees are taught various aspects of leadership.

This semiannual training experience was begun in December 1986. Select groups of employees, recommended by the directors of each DSD Center, participate in a week-long course in the leadership instructional program.

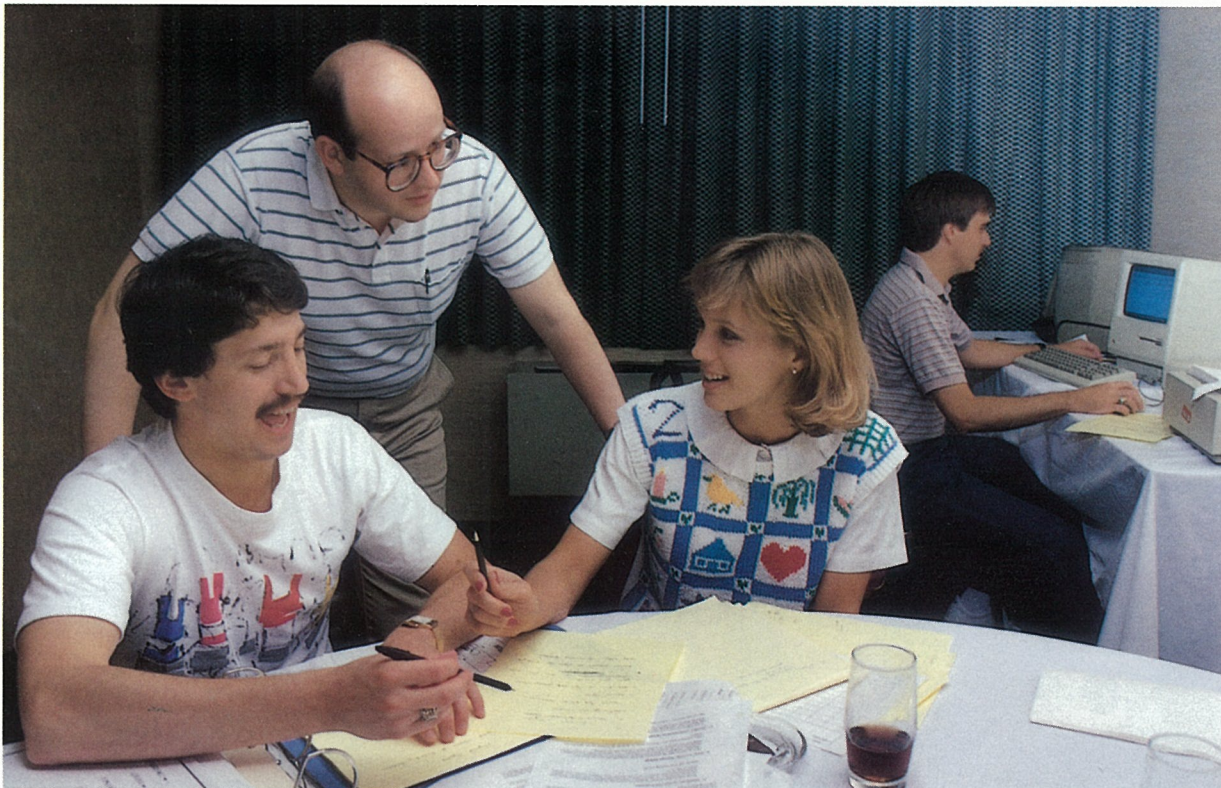
Classes meet daily on specific aspects of project leadership taught by DSD senior management. In addition, students participate in case studies involving actual project experiences and listen to lectures given by outside authorities. Evenings are spent completing a workshop project. The week culminates in a detailed presentation of each team's solution to workshop problems.

"These sessions are proving to be a very effective method of developing project leadership skills in our best technical personnel," said Asaph H. Hall, Vice President and General Manager. "We are learning from each session and refining the seminar each time. Feedback from participants in the first two sessions has been very encouraging."

A typical seminar begins with an orientation session Sunday evening. Sixteen employees, nominated for their technical excellence and performance potential and approved by Hall, attend the seminar in St. Louis.

Each seminar has a theme. For example, the theme of the seminar held in June was "What Can Go Wrong," which most of the lectures and case studies emphasize. Two graduates of seminars lead the teams through the workshop by playing the "customer" and the "program director."

Periodically, the teams are given problems to test their plan's ability to adjust to what can go wrong. Each morning, short presentations are given outlining each team's progress with the workshop assignment. This also gives students many opportunities to sharpen their presen-



Leadership Instruction Given. Data Systems Division employees participating in a recent Project Leader Seminar are: Jerry L. Atkison, Project Software Engineering Supervisor, Western Center (standing); James M. Tharrett, CAD/CAM Software Design Specialist, Eastern Center, and Beverly J. Gilmer, Data Administration Programmer/Analyst, Central Center (seated at table); and Mitchell Seagraves, Senior Programmer/Analyst, Central Center (seated at personal computer at right).

tation skills. On Friday, Graduation Day, each team gives a one-hour project report that is reviewed by DSD management. These presentations are videotaped, and a copy is provided to each student. A check is planned to see if recent graduates are using these critical skills.

The Project Leader Seminars are programmed and administered by Terry Mehan and Dennis O'Rourke of DSD's Training and Development Department. In addition, Hall selects one of his headquarters staff members to serve as sponsor for each seminar.

Eliz. Ducayet Has a New Heart and Lung and a Positive Attitude By Julie C. Andrews

A 29-year-old subcontracts administrator from Electronics Division is back at work and enjoying a new beginning in life after undergoing a heart/lung transplant last December.

After a lifetime of pain and illness — and in the face of earlier pessimistic medical prognostications — Elizabeth Ducayet is enjoying all the things she has never been able to do. "I went bowling for the first time in my life," she said. "Before, I was too weak to lift the ball. I'm also learning to swim." She is also looking forward to her first trip to the San Diego Zoo without having to use a wheelchair.

Ducayet was born with Eisenmenger's Syndrome, a rare disease that has no cure. A hole in her heart caused pressure buildup in the lungs. "Quite simply," she stated, "I was slowly suffocating."

A visit five years ago to the Mayo Clinic made her aware of the heart/lung transplant program, which was still in its early stages, at Stanford University Hospital. The Mayo Clinic counseled her to wait five or 10 years. "At a certain point, I couldn't wait any longer," said Ducayet. Last August, she was accepted into Stanford's program. That step was preceded by a great deal of soul-searching.

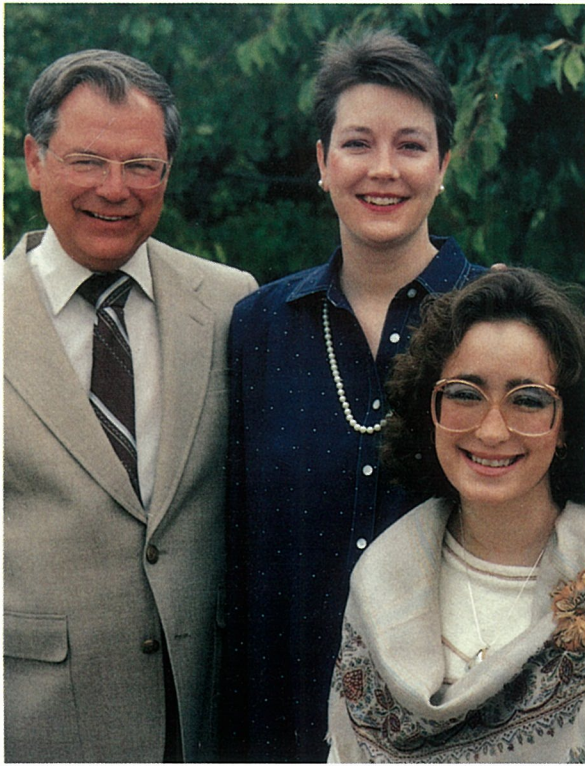
"It took me six months just to get up the courage to go up to Stanford and apply," she said. "I knew the odds were not the best — after all, this is still an experimental program — but there was no choice. I was in so much pain."

During the application process, Ducayet had to meet a series of strict requirements stipulated by Stanford, including total family support, a solid financial condition, absence of major surgeries or serious viral infections and, most important, a positive attitude.

"Stanford personnel spent one entire day interviewing me," said Ducayet. "No job interview will ever be as important. Basically, I was interviewing for my life." Ducayet said her sense of humor was a positive factor in the hospital's assessment of her attitude. "I have a tendency to

joke about my condition," she said. "I guess they took that as a healthy sign."

Ducayet was the 40th person to undergo the heart/lung transplant procedure at Stanford. She was only the second person allowed to enter the program from a full, active life. Ducayet had worked full time at Electronics for three years, after earning degrees in Asian studies at the University of Oregon and a Master of Business Administration degree in Finance at the University of Wisconsin.



Good to Get Back. Elizabeth Ducayet (right) is welcomed back to her job at Electronics Division by her supervisors, Robert F. Patterson and Susan Rile-Strauss.

Once accepted into the program, there was no turning back. "When the call came that a suitable donor had been found, I had to be at Stanford in three hours or less," said Ducayet. That call came last Dec. 18th. She drove to Montgomery Field, near the General Dynamics Kearny Mesa facility in San Diego, and a small jet flew her to Palo Alto, Calif.

Four hours later, she was in the recovery room. "I spent last Christmas hooked up to machines in the hospital, but I had received the greatest gift of all," she said.

She faced a long recovery, although she was up and walking three days after surgery. Within the first week, she was doing stretching exercises and riding a bicycle. Then she began lifting small weights. "Recovery was hard, but everything I went through in the hospital was easy compared to the quality of my life before the operation and the decision to enter the program."

The greatest problem in recovery is organ rejection, a possibility that remains acute for the first four months. Ducayet takes heavy medication to guard against rejection and must go back to Stanford for regular evaluation.

Recently she returned to her old job at Electronics. She said she feels deep appreciation for the support, both financial and emotional, shown her by Electronics Division, her coworkers and her supervisors, Robert F. Patterson and Susan Rile-Strauss.

"When I was in the hospital," she said, "there wasn't a day that went by without a card or call. The support has been just terrific. I couldn't have done it without them. It gave me a fighting attitude."

In addition, Ducayet feels an obligation to Stanford's program to make people more aware of the importance of organ donation.

"People don't realize what it can mean," Ducayet said. "I'm alive today because someone decided to become a donor, but I also have a far better life than before. Next year I'll celebrate my 30th birthday. Pretty good for someone who was not given any hope of seeing it."

Egyptian Tank Plant Managers Complete Training by GDSC

Top managers of the Egyptian Tank Plant recently completed a 12-week management training program that was designed, developed and conducted by General Dynamics Services Company's Detroit Operations.

The managers will play a key role in the management of the tank plant near Cairo, which will provide the overhaul of M60A3 battle tanks and M88A1 recovery vehicles.

Participating in the training program were Engineers

Youssef El-Attar, Mohamed El-Razaz and El-Sayed Ali Ahmed Rashed, Manufacturing Engineer Saeed Zaky Ahmed Nawar, Material and Production Control Engineers Youssef Mahamoud El-Halaby and Abdel Rhman Helmy Gobran and Quality Assurance Engineer Hamdy Hussain Hassan.

GDSC's program included general management and technical training in manufacturing, material and produc-

tion control and quality assurance and included visits to several industrial plants in the Detroit area. GDSC instructors for the training program were William F. Worth, Training Supervisor; William R. Fisher, Instructor Trainer Specialist; and Frederick Ledtke, Instructor Trainer. Patricia M. Jakubic, Training Chief, was responsible for the overall development and implementation of the program.

GD's F-16C Headlines 1987 Paris Air Show



Paris Showstopper. GD's F-16C, powered by the high-thrust GE F110 engine, was the one to watch at the 37th Paris Air Show June 12th-21st. Before weather-wary spectators (upper left), the F-16C taxis toward takeoff. U.S. Secretary of the Air Force Edward C. Aldridge (upper right, in light suit), who later called the F-16 demonstration "a really first-class show," is flanked by GD executives David J. Wheaton, Fort Worth's Division Vice President-Marketing (left), and James R. Mellor, Executive Vice President-Marine, Land Systems and International (right), as Chief Test Pilot Kevin Dwyer put the Fighting Falcon into vertical climb (center left). A replica of Charles A. Lindbergh's Spirit of St. Louis (right center) bridges three generations as it rolls past the F-16 en route to its own daily performance. (Lower left) Following joint signing in chalet of a coproduction agreement between General Dynamics and Indonesia, GD President Oliver C. Boileau pins F-16 tie tac on lapel of Dr. B.J. Habibie, Indonesian Minister of Research and Technology. (See story on Page 1.) Meanwhile, in anticipation of first scheduled F-16 delivery to their country early next year, three Singapore International Airlines flight attendants (lower right) pose at F-16 static display for Fort Worth photographer Bill Williams.

GENERAL DYNAMICS

World

Special Corporatewide Edition July 1987

Dear Employees:

The last special edition of *General Dynamics World* provided you with a summary of the answers to the Survey of Employees which was taken last fall. This special edition will discuss some of our plans for responding to the issues raised by you in the survey.

By now you have had an opportunity to work with your supervisor and fellow employees to understand these issues. Action plans using your ideas or suggestions have been formulated at every level of the Company. Almost 10,000 feedback and action planning meetings have been conducted, thousands of concerns were discussed, and thousands of action plans were developed.

Some of the toughest problems were those that surfaced at the end of the process and were "bubbled up" to be addressed on the corporate level. These items were discussed at a meeting of the executive team on June 1.

Our executive team action planning meeting mirrored those you have had. The issues raised by the divisions were prioritized and discussed. In some cases we agreed an issue was unique to one division and could be handled by that General Manager with his employees and, if necessary, with the help of the appropriate executive at the Corporate Office. Some issues were resolved by the executive team and are described in this issue.

There are six categories of concerns which seem to be common throughout the Company. Most of our executive team meeting was devoted to formulating ways to tackle these issues. These are issues which grew or developed over many years and will take time to resolve. We agreed to form a number of task teams to review some of them in greater depth. These task teams will include employees from various organizational levels and divisions of our Company and thus will continue our efforts to use employee participation to the maximum extent. The task team reports will be reviewed with me within 90 days and the recommendations will be communicated to you.

As I have said before, we are committed to keeping you involved and informed as we proceed. We will continue to report progress on the corporatewide issues and to highlight some of the hundreds of division changes in future editions of *General Dynamics World*. Each division and department will also be reporting to you on an ongoing basis according to their own communications plans. I urge you to continue your active participation and make your responses to these actions known to management.

I want to close by personally thanking each of you for your thoughtful suggestions, many of which are already helping your work unit become more effective. I'm proud of all our General Dynamics teams and proud of how our management is using your active participation in the process of strengthening our Company.

Sincerely,



Stanley C. Pace

SPECIAL REPORT: EMPLOYEE SURVEY ACTION PLANNING

This special edition continues the formal communication of employee survey information of corporatewide significance to all employees. When the survey process was first undertaken, the mission was to provide employee evaluation of the Company as it related to policies and procedures, management practices and job satisfaction in a changing customer climate. This process and the survey results are designed to better manage General Dynamics' response to the changing business climate, employee needs and customer expectations. It was another step in "taking stock of ourselves."

The survey process has been a major undertaking, involving the entire Company over the past 15 months. (See box on page 2 for chart of key survey milestones.) During the feedback phase of the survey, a number of issues were raised based on employee input. As a result of the feedback, solutions were explored and alternative approaches were taken. In a majority of cases, the work groups identifying the issue had the authority and ability to resolve them on their own. The solutions usually took two forms: either a decision was made on the spot by the work group or supervisor to institute the change, or an action plan was established by the work group to systematically eliminate the root cause of the problem. Thus, as the process was designed to do, many problems have been dealt with at the lowest level possible.

In some cases, however, there were issues that had a negative impact on the work group, but that were out of that group's control to do anything about. Within each division these issues were identified to the appropriate level as the action plans rolled up through the organization.

While each division had a slightly different mechanism for bubbling issues up to successively higher levels, every General Manager's staff eventually dealt with those issues that came to the top of the division. Some were incorporated into the divisionwide action plan, which was reviewed with the appropriate Executive Vice President during May. (See article on this page.)



Consultant David Sirota (at right) discusses Survey Action Planning with Stanley C. Pace, Chairman.

CONSULTANT PRAISES PLANS

by David Sirota, Chairman, Sirota and Alper Associates, Inc.

As the General Dynamics Survey of Employees enters the action phase, I would like to offer a few personal observations:

I was asked to review General Dynamics' plans and, while there are variations from division to division in the quality of the plans, they are, as a group, among the best I have seen. They are, by and large, serious documents with key problems revealed by the survey which are addressed in a concrete way. I recently attended a daylong meeting in

During that review, divisions suggested that some key employee concerns were best handled with corporate-level assistance. These issues, generally 2-5 per division, were clarified during the meetings between the General Managers and the Executive Vice Presidents. The resulting 23 issues were grouped into six major categories with the assistance of David Sirota, survey consultant, who also reviewed and analyzed all the division-level plans. (See article on this page.)

This special edition is designed to communicate those issues and the actions planned or taken on them. Stanley C. Pace and his executive team, which includes Division General Managers/Subsidiary Presidents, met in St. Louis on June 1 with David Sirota to address the corporate-level issues. The daylong meeting, which included break out sessions to deal with some of the tougher issues, was led by Pace, following introductory comments by Sirota about the quality and thoroughness of the survey process and plans to date.

The outcome of that meeting is published here. (See article on pages 2-3.) Some items were deemed most appropriate for further local division action and were referred back to the General Manager to work with his employees and appropriate Corporate Executives. Some items were referred to specific individuals for further work. Some of the concerns were resolved and the rationale explained. And some of the tougher issues that needed more study will be assigned to corporatewide task forces of employees to work this summer. A cross section of employees from various levels and locations of the Company will report to Pace within 90 days. The outcome will be published in future *General Dynamics World* articles.

As part of the ongoing communication process, articles for this special edition were submitted by the divisions to share one of their division plans. Also found in this special edition are articles about some of the actions already taken or planned corporatewide to address issues supported by the employee survey data.

St. Louis, chaired by Stan Pace, in which the Division General Managers and Corporate Executives focused on the implications of the survey data for corporate policies and practices. It was an excellent meeting, extraordinarily well led, and participative. Issues were discussed and debated, decisions were made where appropriate, action items were handed out, and corporatewide teams were formed to address particularly complex concerns.

Of course, action plans are one thing and actual implementation another. The success of the entire survey process will depend on the continued commitment and perseverance of the General Dynamics management and employees. How will you know whether the effort has succeeded? First, a successful survey will mean that you will see the required positive changes in your division and your own work environment. Second, when the survey is again administered in about a year, you will be able to make a systematic comparison of those results with the results of the 1986 survey and see there indeed have been changes. The key now is to continue taking positive action, to communicate action plans throughout the Corporation, and to devise a mechanism for divisions to share action plans and other relevant data with each other.

Sirota and Alper again expresses its appreciation to all General Dynamics employees, management and union officials for their cooperation in this large and complex effort.

EXECUTIVES ENTHUSED ABOUT DIVISION PLANS

During May each division survey action plan was reviewed as the roll up of action plans continued. The Division General Manager presented to his respective executive the action plans for issues handled at the division level and also passed along the issues deemed more appropriate for corporate-level attention.

Herb Rogers, Executive Vice President-Aerospace, and seven Division General Managers met in St. Louis May 22 for an all day exchange of plans and ideas. "I wanted to have an open forum so that everyone could benefit from each other's experiences," said Rogers.

Each division survey action plan was presented to the group, including how the information would be communicated back to employees. "Each had a system in place for answering major division-level issues, and they were all confident that the issues they picked reflected the thoughts of their employees," Rogers said. "I was very pleased by the number of thoughtful suggestions that came up through ranks. The fact that so many actions had already been taken care of at the lower levels showed that the survey is a real-time corrective action process."

Jim R. Mellor, Executive Vice President-Marine, Land

Systems and International, encouraged active communication of the plans to employees when he reviewed each of the divisions reporting to him. "I was very pleased with the quality of the plans, particularly since this is our first effort," said Mellor. "However, I think the process used should be the focus. We need to do more than just check items off a list in a plan because they are just symptoms. We need to change the way we do business, to include more open communications and active employee participation to improve the Company.

"I'm concerned that we don't duplicate efforts. The plans clearly show there are some common problems shared by all or most of the divisions, so sharing the solutions is important. We also need to keep our eye on the strengths identified through the survey so they are not lost while we concentrate on the problems."

Rogers said there are three major benefits to the survey process. The first is upward communication. "The employees told us the areas where changes can make them more productive," Rogers said. "More important, they showed their commitment to improving things by suggesting positive ways to implement those changes."

The second benefit is downward communication, and, according to Rogers, flows directly from the first. "We as management are to demonstrate our commitment to them by listening to their legitimate concerns and assisting them in carrying out their constructive plans," Rogers said.

The third payoff affects the bottom line. "Improved satisfaction with the working environment will equal increased productivity and improved quality," Rogers said. "And all will benefit from that!"

The two executives agree the biggest survey-related challenge is to communicate to employees what has been accomplished, what is planned, and the rationale for these decisions. This special edition of *General Dynamics World* is only one way.

Other communications methods are as varied as the number of divisions, since each has tailored the approach to their needs. Examples include publication of special survey newsletters, such as Valley Systems' *Feedback* and Fort Worth's *Update*, special survey editions of regular publications such as *The Quonsetgram*, various displays of action plans in work areas, and all hands meetings where appropriate.

CORPORATEWIDE ISSUES REPORT

This section reports the outcome of the June 1 executive team meeting on the corporatewide issues. Every item bubbled up to this level was included for review that day, with various outcomes as described here. Each issue is accompanied by a brief description of the problem as defined in the division feedback and clarified by the executive team. (Statistical data is not included, since it was detailed in the December 1986 special edition.) The plan of action is briefly described and includes the name of the Executive responsible for the action plan. Division survey coordinators can assist employees with questions.

This section deals with some of the toughest problems described by the survey, but employees also identified a number of organization strengths. While the focus here is on the problems, management also recognizes the need to maintain our strengths while implementing the changes.

This special edition describes only items the divisions bubbled up to the corporate level. Employees are reminded that many of the other concerns described by Sirota and Alper in the December special edition are being dealt with at the division or department level and will be communicated within those locations.

WHERE WE HAVE BEEN — WHERE WE ARE GOING Employee Survey Milestones

WHAT WE HAVE ACCOMPLISHED

- Stanley C. Pace, Chairman, identifies need to take stock of ourselves and the operation of the Company during tremendous internal and external changes.
- Consultant evaluation team (ten Division and four Corporate Office representatives) selects Sirota and Alper, Inc., through competitive bidding, as consultant firm to assist and train Company management.
- Survey questionnaire design results from focus group meetings of employees at all divisions.
- Questionnaire comment and review cycle with management and union officials at each division and major location completed.
- Survey administration conducted simultaneously throughout the Company, with more than 60,000 employees voluntarily participating.
- Company facilitators trained by Sirota and Alper to train and assist management in survey process.
- Over 5,000 managers throughout Company trained to analyze data, conduct feedback and plan actions.
- Special editions of *General Dynamics World* are published giving first the corporatewide survey results, then division analysis, directly from Sirota and Alper.
- Feedback/action planning sessions with employee groups begin.
- Action plans are "rolled up" to each successive level of management.
- Divisionwide plans are reviewed with executive vice presidents, including items "bubbled up" for corporate resolution.
- Corporatewide issues are reviewed with executive team and action plans are communicated to employees in this special edition.

WHAT CAN BE EXPECTED

- Corporatewide task teams will recommend actions on the corporatewide problems. These actions will be reported to Pace and communicated to all employees.
- Ongoing communication of actions planned and actions taken will be implemented. Corporatewide actions will be published in *General Dynamics World*, divisionwide and department plans in local communications.
- Survey cycle will be repeated, with results of second survey measuring progress.

DECISION MAKING/MANAGEMENT STYLE

One of the key opportunities for improvement that Sirota and Alper reported during their initial feedback to the executive team in November was management style and climate. Employees described problems such as lack of listening, too many approval levels, lack of authority, blaming rather than problem solving, and lack of cooperation. As these issues were worked within the divisions, four categories of concerns surfaced for corporate assistance.

► Corporate Management Interface with the Divisions

Issue: The divisions suggested that more coordination was needed, especially in the area of integrating various corporatewide initiatives that affect all locations, such as Management Effectiveness Program, GD-2000, Material

Requirements Planning, and Competitiveness. Some of these initiatives resulted from changing business conditions externally, and some are internal initiatives to improve the organization.

ACTION PLAN:

- The intended working relationship between the corporate staff and the divisions will be discussed at upcoming Quarterly Performance Reviews. *Stanley C. Pace, Chairman*
- The purpose of the corporatewide programs and projects will be routinely discussed at these quarterly

meetings. Divisions will work with the respective Corporate Executives regarding work requests from the corporate staff that conflict with division objectives. *Oliver C. Boileau, President; E. Randy Jayne, Staff Vice President-Corporate Planning; and Corporate Officers.*

► Administrative Improvements

Issue: The Company need to standardize and improve certain business and administrative procedures has increased the number of approvals, length of time for decisions, and number of reports and paperwork to accomplish tasks. Of particular concern were the approval cycles for items requiring Corporate Office executive approval. Simplification and possible reduction of reports for corporate functions and the reduction of the number of corporatewide meetings were also mentioned.

ACTION PLAN:

- The various approval cycles currently required will be analyzed to determine the exact value added for each signature. Streamlining will be attempted and a definition of the "standard" review time will be defined to assist in lead time planning. *Rolf Krueger, Division Vice President-Logistics & Support (FW) and Team Members*
- Each Corporate Officer will provide formal delegation for approvals for items received in their absence. *Cor-*

porate Officers

- Divisions will alert the Corporate Office of critical approvals, which will be given special handling if time sensitive. *General Managers*
- Procedures and guidelines for corporatewide meetings will be established to maximize efficiency while maintaining participative process. *Boileau and Executive Vice Presidents*

► Policies and Procedures

Issue: Concerns were expressed about the process of developing and issuing Corporate Policies and Procedures. The divisions indicated they did not receive feedback on why some of their comments were not incorporated into the final policies. It was also suggested that the General Manager be responsible for implementation of these policies rather than specific division departments, and that relief from some of the provisions be considered when justified and approved.

ACTION PLAN:

- The division review of policy development will be continued with a mechanism included to provide feedback to the division on non-incorporated comments. *Boileau and Larry L. Allen, Corporate Director-Administration*
- A "waiver procedure" or request for consideration of a

deviation for Corporate Policies and Procedures will be reviewed. *Boileau and Allen*

- The reason for designating responsible division department in Corporate Policies and Procedures will be discussed at the July 1987 Quarterly Review. *Pace*

► Planning Processes

Issue: Many divisions and departments are trying to improve their planning process. The corporatewide planning process to develop the annual division Operating Plans was also a concern. Development of the goals for those plans using more division input was suggested, as was earlier dissemination of those goals and more widespread communication of the goals throughout the organization.

ACTION PLAN:

- Since Data Systems Division has some unique concerns about the impact of the planning cycle on its division plan, it will work to get involved earlier in the cycle and will strive for the interface of its goals in support of the other division goals. *Asaph H. Hall, Vice President and General Manager-Data Systems Division and Jayne*
- Methods to streamline corporate and division planning will continue beyond the changes implemented since

the survey. *Jayne*

- Division input will be solicited to help set corporate goals each year for the Operating Plans guidelines. *Boileau*
- Corporate strategic/technology plans are being developed. *Jayne and Leonard F. Buchanan, Corporate Vice President-Advanced Engineering and Business Development*

PUBLIC RELATIONS AND COMPANY IMAGE

Employees perceive that the Company is doing more than it ever has to enhance its image, but they feel more can be done. The survey data indicated that more effective public relations, such as media relations, are needed. Specifics included upgrading community relations efforts and communications of efforts already under way, more national coverage for Company news releases and events, and national advertising campaigns in addition to the the Public Broadcasting Service series already under way.

ACTION PLAN:

- Enhance public relations, such as building a "bank" of goodwill nationally, developing community relations in Company locations, keeping employees informed by releasing news information internally in advance or simultaneously with external releases, and publishing general Company briefing brochures to use with customers and local community activities. *Robert A. Morris, Corporate Vice President-Communications*
- Implement national Company image advertising. *Morris and General Managers*
- Issue Executive Memorandum and/or Corporate Policy on philosophy of community relations and contributions programs, including guidelines for acceptable activities. *Morris*

- Develop a community relations program at each division and publish activities in brochures similar to Quonset Point's. *General Managers*
- Encourage and support community activities of subordinates. *General Managers*
- Build proactive press relations and be more responsive to media inquiries. *Morris*
- Anticipate negative situations and work on developing a positive approach in advance so timely releases can be made. *General Managers, Morris, and William H. L. Mullins, Corporate Vice President-Government Relations.*
- Develop contributions procedures and include division participation in the process. *Morris and General Managers*

WORK SCHEDULE/OVERTIME

Throughout the Company there are long-term and short-term requirements to meet contract obligations or customer initiatives that strain people and equipment. Policies on cost collection methods, labor accounting requirements and extended work weeks generate situations employees felt needed correction, according to the survey and feedback sessions. Specifically, the corporatewide policies on "all hours worked" and overtime for exempt employees prompted the most suggestions. Included as possible solutions were flextime, alternate work days or weeks, and compensatory time off.

Flextime was defined as a work schedule which individual employees set themselves and may vary from week to week.
Alternate work schedule was defined as a work schedule where a group or specific individuals work nontypical hours approved by management in advance in order to meet specific business requirements on a regular or ad hoc basis.
Compensatory time off was defined as time off for excess hours worked in lieu of pay.

ACTION PLAN:

- Study and recommend ways to resolve conflicts between overtime policy and all hours worked policy. Include communications to employees about the government regulations on all hours worked that drive our policies. Review and better define cost centers to reduce the detrimental effects of all hours worked policies. *Team Leader Boileau; Arch H. Rambeau, Corporate Vice President-Human Resources; Standley H. Hoch, Executive Vice President-Finance; James J. Cunnane, Corporate Vice President and Controller.*
- Review policy on overtime, especially definitions and guidelines. Recommend changes or explain rationale for present policy. Consider adding another category to handle compensatory time off within a pay period to improve recognition for extended hours. *Team Leader John E. McSweeney, Vice President and General Manager-Convair Division with salaried exempt employees from several locations.*

Policies for hourly and salaried nonexempt employees are governed by Federal Law and in some locations by union contracts; policy plans are included in the division action plans.

COMPUTER RESOURCES POLICIES

One of the operational inefficiencies employees identified in the survey was the lack of equipment that affects their ability to complete work. In the production areas, the availability of tools and equipment is being worked at the local level at most divisions. However, the policies on computer availability and the compatibility of computer equipment and systems between locations was an issue "bubbled up" for corporate review. This was especially a concern in the administrative support areas.

ACTION PLAN:

- Individual access to computer resources is a division-level issue. The policy on allocation and limitation of equipment in the divisions caught Valley Systems Division during the split from Pomona Division, and their unique needs will be handled as a division issue. *McSweeney*
- Study and recommend actions to provide computer configuration management between departments and locations and better availability of equipment. Determine what business and manufacturing systems and interfaces should be standardized. Data Systems Division will clearly define current and proposed distribution of computer equipment for corporate and division policies. Study the cost trade-off to use employees on off shifts for availability of computers versus buying additional equipment. *Team Leader Michael C. Keel, Division Vice President and Program Director-Cruise Missile (CV); and Hall as functional advisor with employees from several divisions.*

REWARD/RECOGNITION SYSTEM

Although employees rate their pay more favorably than do employees of other American corporations, employees indicated they do not understand compensation policy, such as how increases and promotions are determined. Further, employees feel that pay does not always reflect performance.

They expressed concern about understanding the compensation system, nonengineering salary grades versus engineering, and monetary and nonmonetary reward systems, and cash options for some recognition programs.

Keeping employees informed of promotional opportunities was also of concern, as was the Job Opportunities Awareness Program policy.

ACTION PLAN:

- Pomona Division will work with corporate executives to resolve its division concern about salaries and competitor surveys. *Sterling V. Starr, Vice President and General Manager-Pomona Division and Rambeau*
- Fort Worth Division will study and resolve division concerns on salary grade differences between engineering and nonengineering jobs. *Charles A. Anderson, Vice President and General Manager-Fort Worth Division*
- The corporatewide salary grade structure will be reviewed. *Pace, Rambeau and General Managers.*
- A new communications program to explain the compensation system will be prepared for use corporatewide. *Pace, Rambeau and General Managers.*
- A team will study ways to additionally match individual rewards for individual performance. The compensation system philosophy and merit system elements (ratings, rankings, budgets, etc.) will be included. Review of cash and non-cash options for the recognition award programs, and study of additional ways to provide individual rewards for outstanding individual performance will be included. *Team Leader Hall; and Lawrence N. Doreson, Corporate Director-Salaried Compensation as functional advisor with various division representatives.*
- Review the Job Opportunities Awareness Program to streamline and make more effective for small locations, such as Camden. *Norman C. Stranberg, Division Vice President and General Manager-Camden*

► Appraisal System

The performance appraisals provides opportunities for employees and supervisors to examine individual performance and to plan improvements. Review of the system was suggested, including the policies, procedures and forms used. The process needs to be more objective and provide more useful quality information, according to employees. The guidelines and practices in use need to be communicated. Employees think the appraisal needs to be more closely tied to objectives, and that ongoing coaching and feedback from supervisors is needed in addition to formal appraisals.

ACTION PLAN:

- Divisions are to review and implement new appraisal approaches and procedures, including explaining how the system works. *General Managers*
- Divisions will submit their appraisal approaches, procedures and forms for corporate review. *Rambeau*

EMPLOYEE RELATIONS

► Internal Communications

Other areas that Sirota and Alper think are key opportunities for improvement are internal communications and employee relations. Employees indicate there is insufficient feedback to and from their immediate supervisor on division and Company information, and insufficient effort by management to get employee ideas on work matters.

ACTION PLAN:

- Recommendations for effective ongoing upward communications will be studied and developed. Included will be a review of current methods of obtaining ideas from employees with recommendations for improvements. *Team Leader Starr; Robert W. Truxell Vice President and General Manager-Land Systems Division; with Morris and Rambeau as functional advisors working with a team of employees from various locations.*

► Employee Benefits

The overwhelming majority of employees rate Company benefits favorably in the survey. However, because of shifting social priorities and changing individual needs, there are some benefits concerns that employees raised during the feedback sessions at many locations and organization levels. These included a flexible benefits program, maternity leave for fathers and mothers, eye care benefits, and on-site child care centers. Employees suggested improvements to existing benefits such as reducing the abuses of sick leave, building a "bank" of unused sick leave, improving the salaried vacation policy, and buy back of frequent traveler awards.

ACTION PLAN:

- Evaluate existing flex benefit program proposal and decide on implementation and timing. *Pace*
- Consider inclusion of several additional benefits to the proposed flex benefit program, including eye care, maternity leave, vacation and sick day changes. *Pace and Rambeau*
- Communicate decision to support off-site child care centers rather than use on-site centers. *Pace and Rambeau*
- Review current frequent traveler award policy and communicate government regulations that govern Company policy. *Boileau, Hoch and Allen.*
- Review current salaried employee vacation policy, make decisions on possible changes if any, and communicate to employees. *Pace and Rambeau*
- Study incentives for attendance at Fort Worth Division. *Anderson*
- Communicate to employees the "stop-loss" clause of major medical at Land Systems Division. *Truxell*
- Communicate to employees about the current retiree medical plan more fully. *Truxell*

NEXT STEPS

by Sue Shike, Survey Program Director

The task teams mentioned above will include employees from various levels and locations and will be representative of the employee population to the extent possible. To reduce travel costs, geographic considerations will be made. The teams will report their recommendations and findings in 90 days to Stanley C. Pace and communicated to employees.

An indication of the value of employee ideas is their importance to the solution of these complex problems. As Mr. Pace indicated in his opening letter, the issues that were finally bubbled up for corporate assistance are the toughest. They took years to develop in some cases and will take time to resolve.

As several of the executives have reinforced here, the survey is a new way of doing business. Since the Company lives in an ever-changing world, new problems in the external world affect the internal workings of the Company. If the survey process is implemented well, it provides management with employee ideas to deal with those changes. As previous problems are resolved, new ones are identified and employee thoughts solicited to solve them also. And, of course, we will conduct the next survey, probably in late 1988, to measure our progress on the issues from the 1986 survey and the new ones.

As you can see in this special edition, the survey process is resulting in many positive changes. This report represents only the tip of the iceberg since most of the changes are occurring in the individual departments throughout

(Continued on Page 6)

DRUG POLICY: A MATTER OF SUBSTANCE

The largest percentage of employees who responded to the survey's section on the drug policy said people should be tested, or should accept mandatory testing, for drugs. Almost 70% of all employees completing the survey had comments regarding drug policy, and about 25% of those employees favored drug testing. On the other hand, only about 4% volunteered that the current policy was acceptable. Both the quantity of comments regarding this issue and the emotions conveyed by them indicate that drug usage is an issue that employees feel the Company should address. For details, see the December 19, 1986, special edition of *General Dynamics World*.

While the employee survey was being planned and conducted, General Dynamics was working with a nationally known consulting firm specializing in drug abuse. The consultants visited each Company location and met with a cross section of hourly and salaried employees. The goal of these individual and group sessions was to ensure a

true understanding of the scope of drug and alcohol abuse in the Company. In addition, General Dynamics needed to make sure that any future policies were designed properly to guarantee a fair and consistent approach to individuals abusing drugs and alcohol.

A General Dynamics team is reviewing all the information collected from the survey, from feedback and action planning sessions, and from the consultants' report. However, the team is still working on its task, and therefore no specific companywide policy has been established.

The survey results suggest, however, that the final policy recommendation recognize that the solution to problems associated with drug abuse will require a combination of counseling, assistance, education, deterrence and, when necessary, discipline or termination. The ultimate goal is deterrence so the workplace is free of drug and alcohol abuse and related problems.

SMOKING: A BURNING ISSUE

Smoking policy changes announced in an Executive Memorandum in March by Stanley C. Pace, Chairman, were made in response to the recent warnings by the Surgeon General about "passive smoking" and the responses from employees in the employee survey.

As shown in earlier employee survey publications, more than one-third of all employees who responded to a write-in question about smoking preferred specific smoking areas for employees. More than 25% felt that smoking should be eliminated totally. Only about 10% thought there should be no restrictions on smoking.

The memorandum reinforced the Company's commitment to provide a "work environment free from the risks associated with tobacco smoke." Pace's memorandum said:

"... A change in our attitude relative to smoking in the workplace is required. We must shift our perception from a workplace that generally allows smoking to one that

perceives the workplace as an area where smoking is not allowed, except in specifically designated smoking areas."

Each Division General Manager/Subsidiary President has submitted a plan to address this issue. Those plans are currently under review. In general, the plans are well conceived and address the issues. Some of the plans have been returned for revision. For example, the plans must reflect the elimination of smoking in conference rooms and private offices. When the plans are finalized, each division will implement the new policies according to the timetable the division developed.

The objective of the Executive Memorandum and division implementation plans is to reduce smoking in the workplace and change the perception of our workplaces so that people will see General Dynamics as a non-smoking Company with some provision for smoking employees.

OPPORTUNITIES FOR MINORITIES AND WOMEN

The survey contained two questions concerning opportunities for minorities and women. Though the data indicated that overall employees feel the right amount is being done, 29% feel too little is being done, including approximately 60% of the females and 53% of the minorities.

As a result, action plans have been developed in department and/or division action plans to address this issue. Although the issue did not bubble up as a corporate issue, a history of the corporatewide efforts is presented as part of more open communications.

General Dynamics was one of the original signers of the voluntary Plans for Progress during the Kennedy administration. In a joint statement with the President's Committee on Equal Employment Opportunity signed 30 November 1961, General Dynamics voluntarily agreed to ensure equality of opportunity in its workplace.

Later President Lyndon B. Johnson issued Executive

Orders 11246 in 1965 and 11375 in 1967. The orders provide that government contractors must take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Each division prepares an Affirmative Action Plan which describes actions taken and planned. Over the coming months the divisions will make employees more aware of the contents of these plans.

Through these plans, General Dynamics has made steady and forward progress. For example, in 1961 minorities made up 2.2% of the work force (2,072 of the 93,508 employees.) In 1986 those numbers grew to 15,308 of 104,598 employees, or 14.6%. The table below indicates progress over the last five years for minorities (both male and female) and females.

	Minorities			Females		
	1981	1986	% Change	1981	1986	% Change
Officials/Managers	409	706	73%	303	623	106%
Professionals	1,455	3,056	110%	1,978	5,201	163%
Technicians	786	1,133	44%	1,020	1,448	42%

COMMENTS LEAD TO COMPENSATION CHANGES

The employee survey indicated that substantial numbers of employees do not understand the operation of the compensation system. Corporatewide data shows that only 47% of the employees responding to the survey understand how pay increases are determined, while only 29% understand promotion policies and practices.

Survey related concerns about compensation for hourly employees are being handled locally by each division. Compensation is part of the collective bargaining contract in locations that are unionized. For nonunion locations local management is responsible for hourly compensation.

The vast majority of salaried employees continue to have their increases determined with effective dates mid-year. The merit review process corporatewide began at the Corporate Office in April with analysis of the division compensation surveys which compare General Dynamics' rates with our competitors. The data indicated the competitive situation in many of our divisions had generally improved from last year. The senior executive group in its review took this information into consideration and combined it with data about other companies' 1987 merit funds and the results of General Dynamics' 1986 Review. The group also studied data on money spent the past three years at each division for promotions and professional

advancements.

The outcome was a new approach for the 1987 review policies. The executives approved a total compensation budget for each division representing merit increases, promotions, professional advancements and college entry level adjustments. This budget took into consideration our expenditures in these four areas over the past three years as well as the level of expenditure our competition is projecting in 1987 for the same categories. The divisions now manage this total compensation budget as they deem best. Lump sum increases were added for the first time. Each division now determines what portion of the budget to allocate and the timing for the various types.

In the salaried merit review just completed, the divisions managed the process and the individual merit increases within the budget allocations made by division management from the division total compensation budget. Thus there was considerable variation between divisions in the percentage of employees receiving increases, the size of increases, use of lump sum increases, etc. The corporate review by the executive vice presidents was limited to statistical summaries and studies of the results by age, sex, minority status, but not increases for individuals. The balance of the total compensation budget will be managed by the divisions for promotions, professional advancements, equity adjustments and other increases for the remainder of the compensation year.

OTHER CORPORATEWIDE INITIATIVES

- Some of the questions in the survey were included to gauge employee thoughts on initiatives that were planned or already in the early stages so employee comments could be incorporated into such programs. As a result of the survey, some of the programs were refocused or given additional priority thanks to employee ideas. Some of those are described briefly here.
- **Advertising:** One of the initiatives is institutional or national advertising. In early 1986 Charles N. DeMund from Convair, who is now Corporate Director-Advertising and Promotion, was temporarily assigned to what was then Corporate Public Affairs to work with Fred J. Bettinger, Staff Vice President-Public Affairs, to develop a corporate advertising function. The Public Broadcasting Service series on Eisenhower, Churchill and Lyndon Johnson were examples of initial efforts in this area. In September, Robert A. Morris joined as Corporate Vice President-Communications. He and DeMund competitively bid and selected Wyse Advertising of Cleveland to handle the institutional advertising. Recently they presented their recommendations for a national campaign for executive review and approval. More details will be forthcoming in regular editions of *General Dynamics World*.
 - **Community Relations:** Community relations was another area where employees had good suggestions for improvement. Sarah S. Austin, Corporate Director-Community Relations, is working with community relations managers and coordinators in each division to improve and expand participation, but also to communicate more fully internally and externally some of the efforts already in place. Corporate Communications plans to assist the divisions in publishing brochures similar to one recently written and produced by Communications' George Salamon and Bruce McIntosh, entitled "The Quonset Point Community" highlighting activities of employees at that location. The community relations efforts will also benefit greatly from the planned Corporate Policy and Procedure on this subject that emerged as a corporatewide action item. (See page 2.)
 - **Contributions:** Another new function was added when Winston C. Gifford was hired in 1987 as Corporate Director-Contributions. As the backlog of requests is whittled down with the assistance of the Corporate Contributions Committee, there are also policies and procedures under development to help provide more support in these efforts. The Company has made significant financial and people contributions in the past, but there is a renewed emphasis on systematizing the procedures and tying these contributions more closely to community needs and business benefits and communicating them more completely.
 - **Planning:** Corporate Planning has been responsible for the Operating Plans and the Quarterly Performance Reviews, and continues those efforts. However, both activities have been streamlined significantly thanks to input from the divisions. The Operating Plan cycle has been revised with more division participation earlier in the cycle. The strategic plan process has been streamlined, with significant reduction in review requirements and staff workload. The format and presentations at the Quarterly Performance Reviews have likewise been restructured.
 - **Policies:** When the Company realized several years ago that our administrative procedures and quality had not kept pace with our technical advancements and excellence, the general managers suggested that the Company implement an internal improvement program. Known as the Management Effectiveness Program, or MEP, the first set of reviews was conducted in 1985. The program was reviewed by our customer during the negotiations to lift the Company suspension in 1986. It was agreed the program would meet customer concerns about administrative quality and would be monitored by summary reports submitted during each of the five years of the suspension agreement. Each division or major location is visited on a rotating schedule. Written reports for divisions or locations not visited are evaluated by the corporate team. There also is a review of existing corporatewide policies with the intent to simplify those that can be modified.
 - **Delegation:** In fact, one of the policies changed significantly is the Capital Appropriation Request (CAR) and Lease Appropriation Request (LAR). A team evaluated the processes used for approval. As a result, authority to approve CARs and LARs was delegated back to the divisions for requests under \$2 million for CARs and \$5 million for LARs thereby shortening the approval cycles.

These are but a few of the actions taken concurrently with the survey that deal with issues employees discussed in feedback sessions.

INTRODUCTION TO DIVISION ACTION PLANS

Throughout the Company, hundreds of action plans have been developed and are being implemented. The following samples of those plans were submitted from the divisions. Some are actions from the General Manager's divisionwide plan. Others are from one of the departments or work units. Some are actions that are unique to one location, while others are noticeably similar to what other divisions report here. Both reflect the data. That is, some problems were unique to one division or location, and others were common throughout the Company but could be addressed at the local level and were not "bubbled up" to the corporate level.

The division-level plans have been shared throughout the Company, so employees who wish to know what other locations are doing on a given problem may contact their Survey Coordinator. Also, the divisions are publishing their own plans in special editions or their regular house organs. Other communications include video tapes from the General Managers, bulletin boards, flyers and department status walls.

CESSNA AIRCRAFT COMPANY

At Cessna, business and employee communications were "hot" issues on the survey and received much attention during the action planning process. As a result, a dedicated effort is under way to improve communications with emphasis placed on both expanded and more complete communications of business issues, as well as improved communications on items of general interest to employees.

First, Chairman Russ Meyer has reinitiated the practice of holding quarterly management meetings with all Cessnas managers and supervisors. Timely business issues are highlighted, including plans, programs, sales and current problems. All participants will thoroughly review the quarterly meetings with their employees.

Secondly, major revisions to Cessna's internal employee communications vehicles are under way. In July, the first issue of a revised *Cessnan*, the Cessna employee newspaper, will be published. As a result of the survey, several other employee communication vehicles have been discontinued in favor of the *Cessnan* and, of course, *General Dynamics World*. The best features of those publications will be included in the *Cessnan*, along with more employee interest articles. In July, employee survey action planning will be emphasized in the *Cessnan*, as well as in *General Dynamics World*.

Still another effort to improve communications concerns policies and procedures. In the survey, employees said that policies and procedures were not well communicated. Action plans have been developed to distribute and communicate these better and goals have been set for their revisions where necessary.

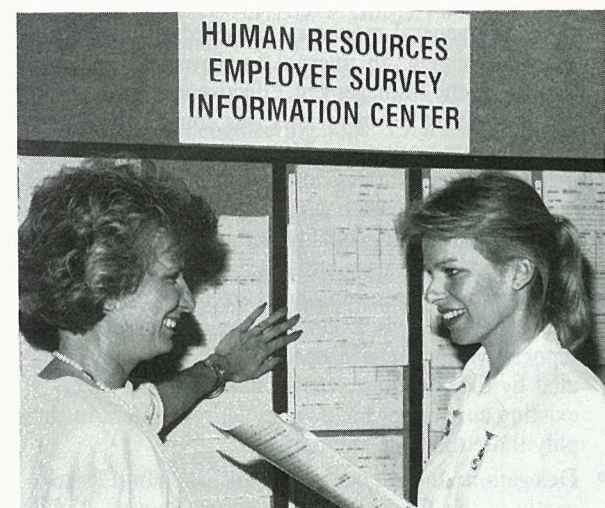
"The employee survey and action planning process has provided Cessna with some excellent insight into how our communications can be improved," said Cessna's Senior Vice President of Personnel, John Moore.

by Fred Bright, Director, Benefits and Employee Relations Programs

CONVAIR DIVISION

One of the key issues raised during the Convair Employee Survey feedback sessions was the need for better communications. This was a divisionwide concern which Acting General Manager Mike Keel said "clearly requires a much stronger commitment to internal communication."

Keel recently demonstrated his commitment by calling the first of a series of All Supervisors Meetings to address the issues and challenges currently facing the Division. He



Convair's Joanne Kowalik, Employee Survey Communications Committee representative for Human Resources (left) and staff nurse Debbie Elcock, RN, discuss survey issues at one of the information centers.

told his management team that "We have control over how we communicate with one another within our organization, and I want us to do a better job."

To further enhance communications, Keel directed the Internal Communications function to form an Employee

Survey Communications Committee. This committee, comprising various departmental representatives, is tasked with prioritizing action plans from the employee survey feedback, tracking the implementation, and communicating the results to all employees. The communication is taking place through staff meetings, departmental newsletters, the Division *Weekly Log*, and information display centers throughout Convair's facilities.

by Cal Samuels, Internal Communications Administrator

CORPORATE OFFICE

One of the areas of concern identified in our recent survey was the perception that the Corporate Office did not give as much attention as it should to the welfare of its employees. Several actions have already been initiated to address this concern.

- An employee's ability to receive a fair hearing is being addressed by the implementation of the Personnel Ombuds Program, both here in the Corporate Office and across the Corporation. The Personnel Ombuds and the hotlines provide an avenue for hearing work-related concerns, investigating allegations, and offering information and advice. The program also assures anonymity and protection from reprisal.
- The concern about lack of career guidance, technical training to do the job, and training for management personnel are currently being addressed through the Personal Effectiveness Program (PEP). A pivotal part of this program is a career development program module. The program will offer specific courses in three broad categories: professional skills, technical skills (computer-related), and General Dynamics business practices.

Along with these two major programs, virtually every department in the Corporate Office has implemented improvements in areas that were within their own control. This kind of action, designed to make General Dynamics' Corporate Office a better place to work, will continue. Ultimately, the action planning process that has taken place during recent months will have the overall effect of improving communications throughout the Corporate Office and the Corporation.

by Bob Abernathy, Corporate Director - EEO/Ombudsman Programs

DATA SYSTEMS DIVISION

The efficiency of DSD's business operations and the effectiveness of the organization in responding to customer requirements is a major concern to us as evidenced by responses to several survey questions. Compounded somewhat by recent corporatewide administrative initiatives, morale, communication, cooperation and technical excellence have suffered. Cumbersome and non-common technical and administrative processes create barriers to effective intra- and inter-divisional activities and add unnecessary cost to our operations.

In response to this concern and as part of our strategic planning and cost competitiveness activities, DSD has initiated an effort to simplify and standardize business processes to improve overall effectiveness, efficiency and responsiveness. A team representing the DSD Centers and Headquarters has been formed. Major topics under investigation include Operating Plan preparation, the processing of Capital Appropriation Requests, financial reporting and improvements in the system development process. The team is obtaining advice from a steering committee of key product division executives in an effort to focus on those processes that have significant impact on the services we provide.

By this fall, we plan to implement improvements in these and other key DSD business processes.

by A. H. Hall, Vice President & General Manager

ELECTRIC BOAT DIVISION

The Electric Boat Division has identified eight priority areas in its Action Plan in response to the employee survey conducted at the end of last year.

Among the issues that the Division is taking very seriously is the parking problem at Electric Boat. After 54% of Division personnel had rated parking as poor on the employee survey, it became clear that inadequate parking was more than just a matter of inconvenience. It was having an effect on employee morale.

In order to improve the situation, Fritz Tovar, our General Manager, established solutions to the parking problem as a priority action under the section that covers working conditions in the Division Action Plan. The next few months are going to witness some important changes, with an anticipated gain of over 25% in new spaces as a result of certain measures under way.

Already, the Electric Boat VanTran fleet has seen an increase with the delivery in mid-May of 10 new vehicles. The vans carry from 12 to 15 people each; as soon as they



VanTran Coordinator Kathi Corona talks with driver Bill Warner who has been assigned one of the new vans.

arrived, they were filled to capacity with employee assignments. Thirty additional vans are being outfitted now and should arrive in July. Plans for restriping the existing lots to allow for more spaces have been designed and will be delivered to the City of Groton for approval toward the end of July. Houses owned by the Division on property adjacent to the lots will be torn down this summer to provide further space; Electric Boat is currently seeking a bid from a contractor to perform the demolition work. At the same time, the Division has commissioned a site survey of property on the periphery of the Groton Plant for another parking location.

Provided all regulatory agency approvals have been successful, the Division should see some definite progress in answering its parking dilemma by late fall. Simultaneously, a Standard Practice will be developed to outline the intended use of the lots, establishing for employees an equitable allocation of the available space.

by Bill Pedace, Director of Communications

QUONSET POINT FACILITY

Electric Boat's Quonset Point Facility has developed an aggressive communications plan to keep team members informed on survey-related action steps. Facilitywide issues are being addressed in all employee distribution memos from the Facility General Manager or the Staff Manager responsible for the particular issue. Each department is posting its own "Action Item Reports" on special bulletin boards. The more significant of the department items are being shared facilitywide through *The Quonsetgram*, the Facility's bi-weekly newspaper. Some of the items included in a special issue of *The Quonsetgram* are outlined below to share with the rest of the Corporation.

• Policy and Procedure Committee

This committee is made up of randomly selected employees from all levels and all departments who are working together to identify policy and procedural inconsistencies in areas such as calendar cards, bulletin boards and job postings.

• Tools and Mini-Cribs

- Vendors are being asked to provide samples of small disposable grinders and burr tools for use and evaluation by teams under controlled conditions.
- Proposal submitted to buy Torque Tester at a cost of about \$8,000.
- Proposal made to establish justification in order to determine options for the control of tools (via mini-cribs, central issue or personal issue).
- Proposal submitted to establish a procedure for recalling existing tools and evaluating the present condition of tools.

• Community Relations

- A VIP Tour Program, including media tours, has been implemented to educate Rhode Island's opinion leaders about the Facility.
- Adopt-A-School and Literacy Involvement Programs have been initiated.

by Tim Crowley, Survey Coordinator

ELECTRONICS DIVISION

In an effort to correct misunderstandings about how the General Dynamics pay system operates, the Research and Engineering Department has set an example for the Division by presenting a Promotion/Advancement Salary Review program to the more than 1,000 employees in the department.

Survey results for the Division showed that 45% of the total work force did not have a good understanding of how pay increases were determined for employees in their kind of work. During the feedback sessions, issues such as favoritism and personality contests were frequently described as being the foundation for promotions.

According to Manager of Engineering Personnel Bill Shine, the program highlights the annual salary review process, entry level adjustments, professional advancements, organizational promotions and equity adjustments, among other topics. More importantly, though, he says it helps to dispel rumors and gives employees the opportunity to ask questions about those issues that — prior to the presentations — were misunderstood and often very vague.

by John Doty, Survey Coordinator

FORT WORTH DIVISION

"Well here we are again, at that point in time when I have to take pen in hand, pull wisdom out of the air, and look like a first class fool when it's all over and done with."

So begins a column penned by Guy Tyra, Manager—Technical Product Support. Mr. Tyra uses a down-to-earth, witty style to communicate to the people in his department about issues raised in the employee survey. The column, titled "Manager's Corner," appears in the monthly logistics newsletter.

Although the logistics newsletter already existed, "Manager's Corner" was "a direct outcry of the employee survey," according to Jack Twedell, Supervisor — Logistics Support Administration. "People wanted good hard facts about sensitive issues — thus the birth of *Manager's Corner*."

The topics Mr. Tyra has covered so far include the performance rating/salaried compensation system, employee development, and attendance.

As Mr. Twedell said, "The point is the ideas and concerns that people want to talk about are coming from the employees, not from management." Mr. Tyra's column is not only fun to read — it provides a solid link in the communication needed between management and employees. As Mr. Tyra said in his April column, "General Dynamics, and especially Product Support, is dedicated to being the best we can possibly be. Obviously, the most important element in that commitment is skilled people."

by Flora Brewer, Survey Coordinator

GENERAL DYNAMICS SERVICES COMPANY

A concern expressed by employees in the GDSC survey conducted last fall and discussed extensively during the employee feedback and action planning meetings is in the area of employee communications. Employees emphasized the need for timely and effective communications between management and other employees throughout the Division.

In response to this concern, GDSC has embarked on an intensified communication program designed to place additional emphasis on both company business and human interest items. One action already under way in this area is the publication of a quarterly GDSC Newsletter. The first edition of the GDSC Newsletter was published in March. Subsequent issues will also include articles on the status of employee survey related actions.

Another effort to improve employee communications concerns managements commitment to all hands meetings to be held on a regular basis.

Employees also said they lacked sufficient knowledge to understand the merit pay system employed by GDSC and that they wanted to be informed of future job opportunities at all GDSC sites and other General Dynamics divisions. A white paper describing the merit pay system was published and sent to all employees in early June. Actions are under way to make sure that the GDSC Job Opportunities Awareness Program is expanded and that job listings are available for review by employees at GDSC site locations.

by Bernie Landau, Survey Coordinator

LAND SYSTEMS DIVISION

One of Land Systems Division's more frequently raised survey issues was employee dissatisfaction with the current Performance Appraisal and Merit Review Process.

Employees indicated they did not like and/or understand the Performance Appraisal and Merit Review Process. Concern over inconsistency in application of these policies by their supervisors was also noted.

In an effort to evaluate the current system and to recommend improvements to the Performance Appraisal and Merit Review Process, our Division General Manager, Mr. Robert W. Truxell has established a Task Force headed by Mr. Donald G. Norman, Vice President, Human Resources.

Several of the activities being considered by this task force include:

- Defining the Performance Appraisal and Merit Review Process in a Standard Practice for distribution to all supervisors.
- Conducting an annual briefing on the Performance Appraisal and Merit Review Process before the cycle starts for all Division supervision.
- Communicating the merit increase distribution results of the process to employees.
- Possible process/policy changes.

Land Systems Division management is confident that successful implementation of the Task Force recommendations will improve employee perception and acceptance of the Performance Appraisal and Merit Review Process.

by Karl G. Oskoian, Survey Coordinator

POMONA DIVISION

One of the ten priority concerns is the adequacy of training offered employees. Comments such as "I don't know what training is available," "There aren't any courses for my skills," and "People are thrown into a job without enough preparation." A number of actions have been identified as initial steps to improve the effectiveness and appropriateness of Division training.

First, the Human Resources Department has undertaken a systematic evaluation of training. Included in this intensive assessment is the Performance Management System series: Interpersonal Skills, Performance Planning and Appraisal and Employee Development. The fourth course in the PMS series, Merit Compensation, is under development. The Supervisory Development series comprised of Supervisory Awareness, Supervisory Orientation and Supervisory Skills Development is also being reviewed and developed as necessary.

During the Action Planning process, several gaps in the available training program were identified. These needs are also being reviewed, with new courses developed as appropriate. One example is an interpersonal skills seminar for salary nonexempt employees. A pilot class has been completed, with improvements in the content currently under way.

In addition, a thorough assessment has been conducted of the training and development needs of top management. Based upon this information, an executive development plan is being reviewed which identifies appropriate courses and seminars for Division staff, as well as timeline and budget information.

A future direction of the Division's training improvement plan will be the identification and development of course options for middle management. An outline of a Management Development Workshop has already been proposed. Pomona's commitment is to respond to the needs of all levels of management with appropriate training opportunities.

Pomona Division management has made a strong commitment to being responsive to employee concerns, as highlighted by the Survey of Employees. The actions related to training efforts are one significant part of the overall Division progress.

by Naomi M. Morales, Survey Coordinator

SPACE SYSTEMS DIVISION

The theme of the survey: concern... communication... collaboration best exemplifies the action planning phase at Space Systems Division. A repeated concern expressed in the survey was "poor communication". Each level of management involved in the feedback process felt a need to address this issue.

Although there was not a unified approach to resolving this concern, the Division's management accepted individual responsibility for improving communications with

employees. As a result, a collaborative effort between management and employees to strengthen communication channels in the Division began. Here are some examples of new activities that have enhanced communication at Space Systems Division.



On May 20, Vice President of Material held his second All Hands Meeting. These meetings are used to communicate various information; this one included the survey action plans for the Material Department.

The Vice President of Research and Engineering holds monthly Round Table discussions with selected employees; the Vice President of Contracts and Estimating instituted a meeting forum to establish better communications with program managers. The Vice President of Human Resources instituted an expanded job posting program to communicate job openings within the Division. The Chief of Human Resources at Eastern Space and Missile Center gave presentations on performance planning and appraisal and merit compensation to better inform employees of the system. Vandenberg Air Force Base management is providing regular feedback sessions with its employees to enhance communication. These are just a few of the new communication efforts at Space Systems Division.

by A.M. Lovelace, Corporate Vice President and General Manager

VALLEY SYSTEMS DIVISION

As a result of the employee survey, the contract for the entire Valley Systems food service operation, including cafeterias, vending machines, catering trucks and special services, will be awarded through competitive bidding.

To accomplish this, an ad hoc committee has been set up to review potential food service contractors. Our final choice will have to be flexible enough to meet the Division employees' needs and will have to be willing to listen to our feedback and make changes as necessary.

No matter which company wins the food service contract, employee involvement will be part of the new approach. The cafeteria is an important part of the work environment, and employees need to be part of the decision-making process.

We are in the final stages preparing our Request for Proposal for release to prospective bidder companies, and we would like to be in a position to make a decision by mid-July. It is gratifying to have the opportunity to respond so directly to employee concerns and to be able to make Valley Systems an even better place to work.

by Bill Coleman, Manager Health and Employee Services

NEXT STEPS

(Continued from Page 3)

the Company, as this "bottoms up" process was designed to do. During my visits to each division and major location this spring, employees told me of many changes occurring at their levels and their appreciation for the more open communications process that the survey initiated.

Meanwhile, each division will, or has published, the divisionwide action plans. The departments and individual work units are sharing their plans with employees using a variety of creative methods.

Everywhere in the Company we are recording the lessons learned as we progress through this new process. You can help by making your reactions known to management periodically or by contacting your division Survey Coordinator. For corporatewide issues, contact the persons indicated in this edition who are spearheading those efforts, or send comments to me if we have missed important points.

Remember — your ideas are important!

Company Launches National Advertising Drive in Print, on TV

The American public will hear about and see more of General Dynamics over the next year, because of a national advertising campaign recently begun by the company.

Company ad.....Page 2

"This campaign is just one part of our effort to make the American public more aware of General Dynamics, its products and its people," said Chuck DeMund, Corporate Director-Advertising and Promotion. "Historically, we had depended on our many successful and important programs to speak for us. That approach had to be changed a few years ago when our reputation and image were at a low ebb following a rash of investigations and unfavorable publicity. We had changed from having essentially no profile to having a high, bad one."

Early in 1986, the company began, in the words of General Dynamics Chairman Stanley C. Pace, "to put some goodwill money in the bank." Implementation of the plan began with the underwriting of a series of Public Broadcasting System specials on 20th century leaders. At the same time, a competition was being held to select an advertising agency to develop a campaign to promote the corporate image. The winner of this competition was Wyse Advertising of Cleveland.

Assisted by a research firm, Wyse first did extensive research with focus groups comprising people from the financial community, the media, politics, customer organizations and regulatory agencies. The goal was to determine what perceptions these groups had of the company and the defense industry and to identify possible themes for an effective corporate image campaign.

Agency people also visited the divisions and the Washington and Corporate offices. This allowed key individuals

(Continued on Page 3)



Future Falcon. An artist's drawing of the Agile Falcon shows the aircraft's larger wings. Other upgrades would enable the F-16 to counter Soviet threats of the mid-1990s.

Agile Falcon Next Logical Step in F-16 Evolution

On July 27th, the company submitted a formal proposal to the U.S. Air Force for a five-nation program of major improvements in future production models of the F-16 Fighting Falcon as the "next logical step" in the aircraft's evolution.

This program, designated "Agile Falcon," will take full advantage of two significant F-16 program upgrades already planned by the U.S. Air Force for improved propulsion and avionics systems. It will add a third capability upgrade with important aerodynamic and structural improvements, including a larger wing, to meet air combat threats predicted for the mid-1990s.

The F-16 Agile Falcon would continue to provide an affordable low end of the fighter aircraft cost spectrum, complementing the Advanced Tactical Fighter (ATF) now in development. It also would form the basis for continuation of the U.S. partnership with four European nations already participating in the F-16 program as they look toward replacing their aircraft inventories. This is consistent with a congressional guideline for increased NATO cooperation in weapon systems development.

In submitting the proposal to Air Force Secretary Edward C. Aldridge, Stanley C. Pace, Chairman and Chief Executive Officer, said:

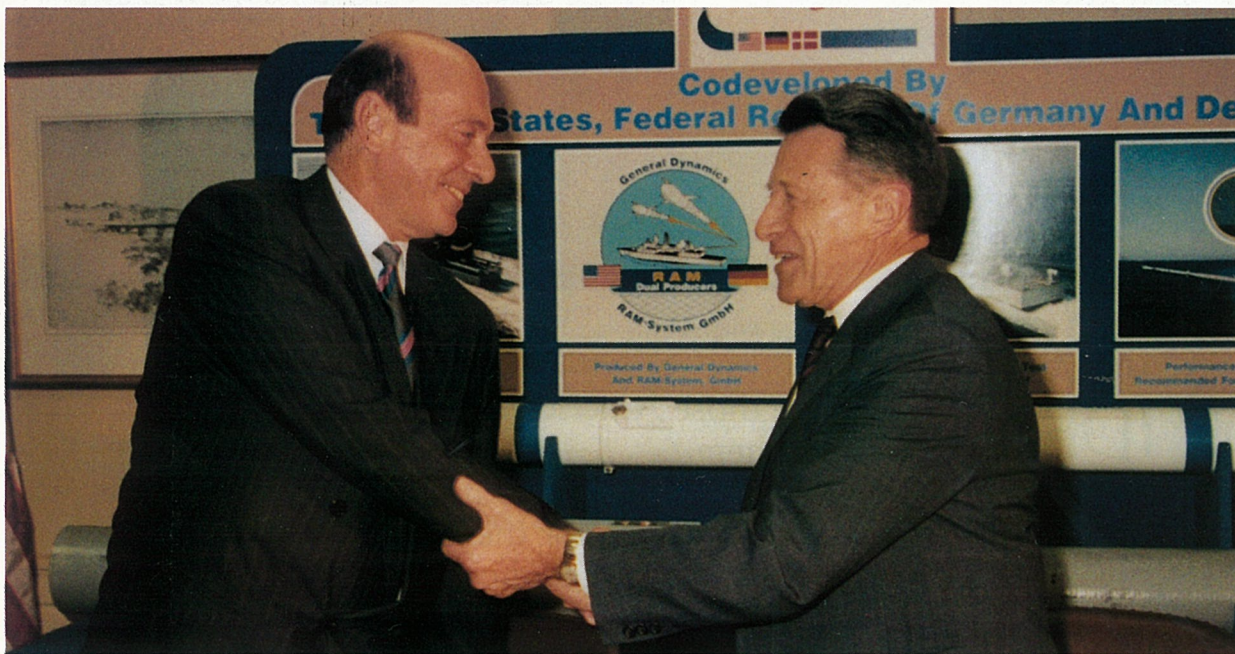
"For nearly a decade, the F-16 has been an important part of the U.S. Air Force program to modernize and field a highly capable tactical fighter force that is fully responsive to the MiG-21/MiG-23 class of threat of the 1980s.

"With attention shifting to the MiG-29/SU-27 class threat of the 1995 time period, the USAF is moving aggressively to field a new, very capable air superiority fighter, the ATF.

"It is to this end that General Dynamics is now proposing the next logical step in the F-16 Multinational Staged Improvement Program. It will complement the mission capability of the new ATF as effectively as the earlier F-16s complemented the F-15s that the ATF will replace."

Pace said the Agile Falcon concept had been under study for about three years.

(Continued on Page 8)



Let's Shake On It. West German Defense Minister Manfred Woerner (left) and U.S. Defense Secretary Caspar W. Weinberger shake hands after signing the RAM Memorandum of Understanding.

Valley Systems, Consortium to Coproduce RAM

A program for dual-source production of the Rolling Airframe Missile (RAM) system by Valley Systems Division and by an industrial consortium in West Germany became official with the signing of an agreement between the two countries on Aug. 3rd.

The Memorandum of Understanding (MOU) was signed by U.S. Defense Secretary Caspar W. Weinberger and West German Defense Minister Manfred Woerner at a Pentagon ceremony. Government and industry officials from both countries attended, including Chairman and Chief Executive Officer Stanley C. Pace; Ralph E. Hawes, Corporate Vice President and General Manager of Valley

Systems; and Joseph M. Pennisi, Division Vice President and RAM Program Manager at Valley Systems.

Observing that RAM "is about to go into production following joint U.S.-German development," Weinberger said:

"It will give both our navies an important and very effective new weapon to counter the deadly threat of anti-ship cruise missiles.

"Germany and the U.S. have shared equally in the costs of developing RAM. We have also shared the demands

(Continued on Page 8)

Income Rises 21%; Backlog Reaches All-Time High

The company announced on July 27th that net income for the second quarter of 1987 totaled \$125.1 million, a 21 percent increase over the \$103.5 million recorded for the same period last year. Earnings per share were \$2.92 compared with \$2.43 in the second quarter of 1986. For the first six months of 1987, earnings were \$230.5 million, or \$5.37 per share. In the same period a year ago, the company earned \$173.6 million, or \$4.07 per share.

Sales in the second quarter reached \$2.4 billion, six percent above the 1986 figure of \$2.3 billion, while sales for the first half of 1987 were \$4.7 billion, compared with \$4.3 billion a year earlier. The company's funded backlog at the end of the second quarter was \$16.4 billion and total backlog (funded and unfunded) reached a record \$24.5 billion. Comparable amounts at the same time in 1986 were \$16.6 billion and \$23.7 billion.

"The second quarter results are in line with what we had expected," said Stanley C. Pace, Chairman and Chief Executive Officer. "The marked increase in net sales in our Military Aircraft business is a result of higher F-16 production rates of 26 or more aircraft per month under the multiyear contract received from the U.S. Air Force in 1986 and under new and follow-on contracts from allied nations."

"At the same time, earnings in Military Aircraft were reduced by costs incurred for development of advanced aircraft," Pace said. "We believe that these long-term investments are in key technologies and programs in which General Dynamics has great strength and for which our customers have true and valid requirements."

(Continued on Page 4)



THEY DIDN'T ASK A DECORATOR FOR IDEAS. THEY HAD THEIR OWN IDEAS.

This factory floor in Ft. Worth, Texas, is a full mile long. B-24 Liberators rolled off the line here, then flew off to help roll back the Axis advance in World War II.

Today, we build the F-16 Fighting Falcon here. The Air Force rates it the highest-quality tactical fighter in the world.

We are proud of this plant.

We are proud of our plane.

But we are most proud of our people.

See those American flags? There's a full mile of them.

We didn't put them there. Our people did.

We didn't pay for them. Our people did.

We don't clean and care for them. Our people do. Spending their own time and their own money to do it.

Perhaps the flags help our people create the kind of environment they want to work in by reminding them what they are working for.

They are proud of the plant. And are proud of our planes, too.

But they are most proud of our country.

GENERAL DYNAMICS

A Strong Company For A Strong Country

Abrams Undergoing Survivability Tests At Aberdeen Grounds

The U.S. Army has begun survivability testing of M1 Abrams tanks at Aberdeen Proving Grounds in Maryland. Live rounds of varying calibers will be fired at fully loaded tanks to determine how well the tanks withstand the hits. Each tank will be hit until it is destroyed. Data gathered from the tests will be used to update the Abrams so it can better withstand enemy weapons. Tests will be conducted in two phases. The first will last about a year and the results will be used to modify the Abrams. The modified version will then be used for live firing in the second phase to determine how well the modifications work. The tests are scheduled to end in August 1989. The Abrams was designed with great emphasis on cruise survivability, and the Army has been shooting at the Abrams or at its subcomponents since 1972 in various tests to validate and improve armor and other survivability features.

Four Tomahawks Tested Successfully Off Florida

Four U.S. Navy Tomahawk cruise missiles were launched within a 48-hour period July 17th through 19th from Navy vessels operating in the Gulf of Mexico, demonstrating land-attack and ship-attack capabilities of the weapon system. All four unarmed missiles were successfully recovered and will be refurbished for future use. All of the Tomahawk variants used during this series of tests are in production at Convair and are presently in operation with the Navy. In the first test flight, a Tomahawk flew a 500-mile preplanned land-attack mission over portions of Florida and Alabama to the Eglin Air Force Base Test Range. The second test flight demonstrated the ability to search for, locate and attack a target at sea. The third and fourth Tomahawks were launched 18 hours apart from a submerged submarine. Both flew land-attack missions to the Eglin AFB Test Range after being launched from a torpedo tube.

EB Employees Help Oceanography Program

Electric Boat recently helped a nonprofit organization in Groton, Conn., improve its resources. Project Oceanology, a research program, works with the local education system to provide students and adult groups with first-hand experience in marine biology studies. One of the Project's research tools is Enviro-Lab II, a custom-made vessel that carries out exploratory investigations of marine life in area waters. Together with students from a shipbuilding class in Groton, two employees from Electric Boat, Cornelis van Mook, Principal Engineer, and Peter Canning, Senior Naval Architect, designed and installed a travel lift on Enviro-Lab II.

Offset Travel Program Will End Jan. 1st

Company employees have had an opportunity since 1984 to travel to such countries as South Korea, Japan, Thailand, Singapore, Hong Kong, China and Turkey through the GD Offset Vacation Program. The program will end Jan. 1st. Interest-free loans will be available until the offset vacation program ends. Travel must commence no later than Dec. 31st for eligible employees to qualify for interest-free loans. For information and brochures, employees should call their division travel offices or toll-free 1-800-527-8448 from anywhere in the United States except Texas and 1-800-482-8282 from Texas. Percival Tours (Orient) and World of Oz (Turkey) will offer the tour programs directly to General Dynamics employees at the same discounted rates after Dec. 31st.

Current & Comment

(Observations of interest to the company and the industry will appear regularly in this column.)

WATCH FOR IT - CBS-TV cameramen visited Lima, Ohio, on Aug. 4th-5th to film work being done by inmates of the Ohio Reformatory for Women on a housing rehabilitation project being sponsored in large part by General Dynamics' Land Systems Division. The story is expected to air in late August or early September as a segment on the "CBS Sunday Morning News with Charles Kuralt."

STATE STATS - The recently released DOD report on FY 1986 prime contract awards (by states) has California (1), Texas (2) and Missouri (3) receiving 60 percent of the more than \$23 billion spent for military airframes and related assemblies. Of the \$21.5 billion spent for Missile and Space Systems, California, Massachusetts and Texas accounted for 58 percent, while Connecticut, Mississippi and Virginia received 44 percent of the \$9.7 billion spent on shipbuilding. Michigan, California and Connecticut received more than 61 percent of the DOD's \$3.7 billion in awards for combat vehicles.

HAPPY TIMES - General Dynamics joined hands earlier this month with the MAKE-A-WISH Foundation,

THE MESSAGE IS THE SAME - General Dynamics' national ad campaign that debuts this month (see story on Page 1) is the company's first "image" campaign in nearly 20 years to be scheduled in national newswEEKlies, business publications and general interest magazines. A look back 45 years ago, before some of today's divisions were incorporated under the GD name, turned up the following samples of advertising that were appearing in the *Saturday Evening Post*, *Collier's* and other magazines:

"O'er the ramparts we watch as we track a guided missile aimed at an attacking enemy or his home base. Yes, missiles may fight tomorrow's battles or prevent them. And Convair, the only company developing and building every basic type of aircraft, has a guided missile team helping America achieve a weapons system for every conceivable mission."

CONVAIR

San Diego & Pomona, California • Fort Worth & Daingerfield, Texas

"Pride of the Fleet! They've got guts — the men who fight aboard U.S. submarines. They're tough and skillful, too. They have to be. For serving on a sub calls for plenty of ruggedness and steady nerves. . . ."
"We at the Electric Boat Company, oldest and largest shipbuilders of submarines in the USA, have confidently accepted a great responsibility — building more and more fast, powerful and highly efficient submarines for these heroes of the Navy's 'silent service.' We are working day and night, delivering the goods."

ELECTRIC BOAT COMPANY

33 Pine Street, New York 5, N.Y.

Advertising Campaign Launched by Company

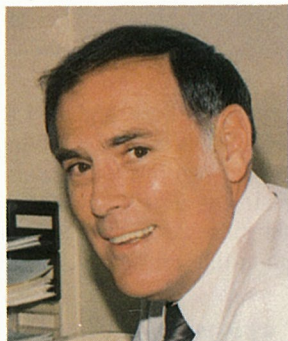
(Continued from Page 1)

in the company to talk to the agency and to give the team an understanding of GD's people, products and philosophy. "The tour was a real eye-opener," said Bob Amer, Wyse Vice President-Account Group Supervisor. "From Groton to San Diego, we were impressed by the skill, dedication, professionalism and patriotism of General Dynamics employees. As a matter of fact, we got our first idea for an ad while touring the Fort Worth plant. You look at that mile-long plant, you see the F-16 assembly line, you see hundreds of American flags, and you know what General Dynamics is all about." The advertisement that resulted is displayed on Page 2 of this issue. It features a photograph showing Fort Worth's mile-long assembly line and the American flags that Fort Worth employees purchased and maintain. This is one of four ads ready for publication. The campaign will begin in national newspapers: *The Wall Street Journal*, *Washington Post* and *Washington Times*; news magazines: *Time* and *U.S. News & World Report*; business publications: *Barrons*, *Business Week*, *Forbes* and *Fortune*; political publications: *National Review*, *National Journal* and *The New Republic*; and general readership publications: *New Yorker*, *Smithsonian*, *National Geographic* and *American Heritage*. "Our budget does not allow us to talk to the U.S. population as a whole, so these initial media selections

obviously target the opinion leaders," DeMund said. "Our resources must be directed primarily toward people who have the potential to influence the near-term progress of the company." Robert A. Morris, Corporate Vice President-Communications, said: "Our 106,000 employees will also see the ads in *General Dynamics World* beginning in this issue. I want to be sure that our whole work force is aware of the campaign. They have suffered long and hard while their company has been the subject of criticism. We want them to see that their side of the story is now being told." In its second phase, the campaign will move into television beginning in February 1988. The first commercials will appear during 16 days of ABC-TV coverage of the Winter Olympics from Calgary. Spots will be run in most major plant communities and in larger population centers, including New York, Washington and Los Angeles. The commercials will air over 170 times during this period. Also beginning in February, General Dynamics will share sponsorship of "Election Watch '88" on the Cable News Network (CNN). During the eight months between the primaries and the November 1988 election, over 300 company commercials and "billboards" will appear on CNN and CNN Headline News. The print campaign will also continue during this period. By the end of 1988, company ads will have been seen an average of 12 times by over 90 percent of the target audience and by a significant percentage of the public at large.

Convair Employee Is Honorary Chairman Of Navy Foundation

Thomas S. Crow, a former Master Chief Petty Officer in the Navy and now Chief of Management Development at Convair, is serving as an honorary chairman of the U.S. Navy Memorial Foundation, a combined civic and military group whose support has made possible the memorial to the United States Navy now under construction in Washington, D.C.



Crow's 31-year career with the Navy culminated in his being appointed Master Chief of the Navy, the highest enlisted naval rank. Crow

is one of only five Master Chief Petty Officers to hold this rank. As Master Chief of the Navy from 1979 to 1982, he was active in fund-raising efforts for the Foundation, working with other active and retired naval leaders, including former Secretaries of the Navy and Chiefs of Naval Operations.

"As Master Chief of the Navy, I served essentially as an ombudsman for the enlisted community," said Crow. "I reported to the Secretary of the Navy, Chief of Naval Operations and the Chief of Naval Personnel." He and his wife, Carol, spent nearly 70 percent of the three-year tour of duty traveling to naval bases worldwide, talking to enlisted personnel to provide a channel for their concerns to the Navy. He provided the enlisted man's point of view for the Memorial Foundation.

The design of the memorial is people-oriented, Crow said. A larger-than-life statue called the Lone Sailor will stand at the edge of a 100-foot circle representing the world.

"The statue represents every sailor who has served the U.S. Navy since its founding in 1775," he said.

Peterman Appointed Cessna Vice President

Bruce E. Peterman has been named Vice President of Operations at Cessna. He will be responsible for all aircraft manufacturing and engineering operations in Wichita, Kan., and Cessna's McCauley Accessory Division in Vandalia, Ohio.

Peterman, a 34-year Cessna veteran, was Vice President of Product Engineering from 1981 to 1984, following a nine-year term as Chief Engineer of Cessna's Wallace Division.

He joined Cessna in 1953 as a designer and has been Flight Test Engineer, Project Engineer, Chief of Propulsion and Manager of Technical Engineering.

A native of Merrill, Wis., Peterman is a 1955 graduate of Wichita State University, where he also received his master's degree in aeronautical engineering in 1961.

Quarterly Report . . .

(Continued from Page 1)

"We are encouraged by Cessna's continuing leadership position as a worldwide supplier of business jets and by the significant improvement of its second quarter performance over last year in a market that remains depressed," Pace added.

As a result of changes in the tax rate, the company's accounting method for deferred taxes required a reduction to the provision for income taxes in the second quarter of \$20 million, or 47 cents per share, and of \$40 million, or 93 cents per share, for the first half of 1987.

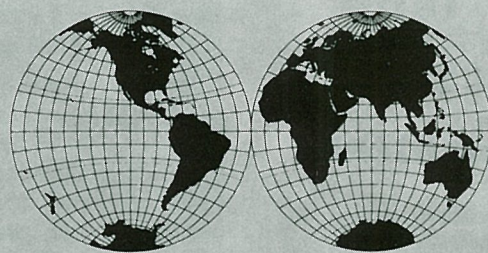
GENERAL DYNAMICS

World

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Manager of Internal Communication: Edward D. Williams

Contributors: Julie Andrews, John Doty, Larry Elwell, Jim Gilkerson, Graham Gavert, Dean Humphrey, Jack Isabel, Dave Lange, Jerry Littman, Karl Oskoian, Jack Price, Tom Rule, Chris Schildz, Joe Stout, Z. Joe Thornton



Around the World

CHQ: Kelly S. Lang, Mark A. Fogle and Terrence Vander Ploeg joined as Auditor . . . Martin M. Stephens Jr. as Senior Auditor . . . Deborah A. Truitt as Supervising Senior Auditor . . . Edward S. Kidston as Senior Subcontract Auditor . . . Catherine L. Brunk as Consolidation Accountant . . . Tesa J. Rogge transferred from Pomona and was promoted to Information Systems Auditor . . . George H. Schumacher was promoted to Corporate Manager-San Bernardino . . . Robert T. Cetola to Corporate Director-Langley.

Fort Worth: Charles L. Robeson was appointed to Material Operations Director . . . Donald C. Wren to Procurement Director . . . William W. Akins was promoted to Senior Manufacturing Engineering Specialist . . . Gregory S. Bennett to Material Control Manager . . . Michael W. Brassell to Material Cost Supervisor . . . James R. Britton and Charles E. Moritz II to Material Cost Chief . . . Jack D. Burkholder, Thomas J. Estes, Karen R. Pinkston and Robert J. Ury to Material Planning Chief . . . Larry W. Cameron, Tim N. Drummond, Gary D. Linville and Tony R. Taube to Purchasing Agent . . . Vyron M. Carpenter Jr., Joseph S. Cosman and Bobby G. Hubble to Material Planning Supervisor . . . Jimmy R. Chambers, Bill Conly, Eddie A. Haines, William A. Haines and G.D. Higgins to Project Manager . . . Neil A. Collins to Principal Field Service Engineer . . . Samuel R. Deviney, Billy J. Perrin, Charles M. Walters and Ralph E. Welton Jr. to Procurement Chief . . . Jesse J. Elmore and John H. Fee to Material Cost Supervisor . . . Gilbert A. Helsel and John D. Wruble to Quality Assurance Chief . . . Dwight L. Hill II to Procurement Manager . . . Jerry E. Johnson to Material Manager . . . Mark A. Lambert to Senior Program Analyst . . . Spencer P. Magleby to Senior Engineer . . . Larry E. Martin to Process Planning and Controls Manager . . . Maxine M. Merriman to Engineering Administrative Supervisor . . . Leela C. Roesicke to Manufacturing Control Supervisor . . . Gene C. Steele Jr. to Inspection Supervisor . . . Michael A. Williams to Engineering Chief . . . Edward D. Youngman to Production Specialist.

Space Systems: Frank A. Bilotta was promoted to Finance Manager . . . Thomas E. Dobyns to Operations Product Manager . . . Michael D. Packer to Manufacturing Technology and Producibility Manager . . . Carla F. Caira to Financial Supervisor.

Convair: Mark R. Sunday was promoted to Integrated Logistic Support Engineering Manager . . . Stephen N. Ashbarry to Configuration Management Chief . . . Brian J. Stevens to Human Resources Supervisor.

Electronics: Melissa M. Richardson was promoted to Program Manager . . . Jerone J. Oster to Quality Supervisor . . . Patricia J. McClure to Senior Administrative Financial Analyst . . . Keith R. Corey to Senior Administrative Financial Specialist.

Pomona: Peter McCray was appointed to Chief Engineering and Technical Director . . . James F. Godfrey to Quality Director/Camden Operations . . . Conrad L. Wilcoxon to Advance Long Range Missile Programs Director . . . Henry Franich was promoted to Project Coordinator . . . Patrick J. Murray to Electronics Engineer . . . Reuben W. Roshon to Project Administrator . . . Anthony J. Seibert to Engineering Manager.

Electric Boat: Robert G. Boyce was appointed to Director of Contract Administration.

AMSEA: Thomas S. Cowan was appointed to Marketing Director . . . James L. Pearsons was promoted to Special Projects Manager.

Land Systems: Robert G. Diaz was appointed to Engineering Program Director . . . Donald L. Shoemaker was promoted to Quality Control Engineering Senior Supervisor . . . Bobby J. Jones and Angelo Riccobono to Inspection General Foreman . . . Gale R. Zink to Assistant Program Manager . . . William R. Dekeyzer to Document Control Supervisor . . . Daniel A. Monaghan III and Thomas W. Bulliner to Engineering Supervisor . . . Frank Perkins to General Foreman . . . Jill M. Wagner to Foreman . . . Ronald C. Wamsley to Engineering Services Chief . . . Paul E. Parthemore to Maintenance Skilled Trades Foreman . . . Michael G. Heier to Guard Lieutenant.

Valley Systems: Donald T. Flynn was appointed to Production Engineering Director . . . Leonard J. Husted was promoted to Production Engineering Manager . . . William J. Whalen to Program Administration Manager.

DSD: At Western Center, David L. Evans was promoted to EIDS Program Manager . . . Lawrence R. Nevitt to Computer Systems Specialist . . . Pamela Bergner and Patricia C. George to Software Engineer . . . At Eastern Center, Louis W. Piper Jr. and Gerard J. Thompson to Software Design Specialist . . . At Headquarters, Edward J. Evers transferred from Eastern Center and was appointed to Technical Software Director . . . David L. Schulte was promoted to Computer Services Manager.

GDSC: Joseph P. Aquino was appointed MIAI Coproduction/Egyptian Tank Plant Programs Director . . . Michael J. Dupree was appointed Programs Management Director.



Award Winners. Darryl Mayhorn and Andrette Watson have received top honors from INROADS/St. Louis, a national organization that develops and places talented minority youth in business. The two received the INROADS Mark of Excellence Award, presented each year to two college seniors for academic achievement and community service. Watson became an INROADS intern at the Corporate Office during her sophomore year at Washington University and, upon graduation in May, joined the Corporate Office full time as Accounting Administrator. Mayhorn, a senior at the University of Missouri-St. Louis, also became an intern as a sophomore and works in the accounting area at Data Systems headquarters in St. Louis.



Biggest Peacetime Airlift. One of 132 Citation business jets (left photo) participating in the Cessna Special Olympics airlift lands in South Bend, Ind. A passenger in the airlift (right photo) waves from a Citation after arriving in South Bend.

Cessna Citation Airlift Is Something Special for Special Olympians By John Ross

The media described it as the largest peacetime airlift in U.S. history . . . as the largest gathering of Cessna Citation business jets — or any business aircraft . . . and as one of the most intensive volunteer efforts by American business in behalf of a public cause.

On July 31st, 132 Citations owned by a cross-section of American corporations flew almost 1,000 Special Olympians and their coaches to the International Summer Special Olympic Games at Notre Dame University and St. Mary's College in South Bend, Ind.

Citations airlifted entire delegations of athletes and coaches from 12 states east of the Rocky Mountains to the games, which attracted over 4,000 athletes from all 50 states and 60 countries.

The state delegations assembled at airport staging points in 16 cities. Beginning shortly before 9 a.m. local time and continuing for the next 6½ hours, a Citation was taking off somewhere every three minutes. Each carried four to eight Special Olympians.

Arrivals in South Bend were scheduled at three-minute intervals. So closely was the complex flight plan followed that the last of the 132 aircraft, scheduled to land at 3:12 p.m., touched down in South Bend at 3:16.

On Aug. 8th, the Citations transported the Special Olympians back to their home states.

The airlift generated many firsts. It was the first flight of any kind for the majority of the mentally handicapped Special Olympics athletes and certainly the first in a corporate jet. For most of the Citation pilots and their flight crews, it was their first experience with an airlift.

"I've seen airplanes like this on TV, but I never thought I'd get to ride in one," one 14-year-old gymnast said. "It's neat!"

Another said: "I got to go up front and talk to the pilots. I'm glad they were flying it and not me because I didn't know what all those gadgets were. Being a pilot is hard work. But it looks like fun."

A 16-year-old swimmer found her Citation III flight addictive. "I don't ever want to go anywhere any other way," she said. "I didn't get sick. I always get sick in the

car."

The Citation flight crews had their own memorable experiences. One of the pilots helped unload the athletes and their baggage in South Bend. Then, preparing to reboard the Citation, he was halted by one of his young passengers who gave him a mighty hug. One by one, the other athletes stepped up to embrace him — the Special Olympians' universal expression of appreciation and affection. The pilot was still beaming as he taxied away.

"These kids made us feel like heroes," another veteran pilot observed. "They are so open and genuine. I don't know when I've enjoyed anything this much."

His copilot added: "It would be nice if all our passengers were as appreciative and polite as these people. We got a thank-you from every one of them."

Another crew member said his planeload was the most spirited group of passengers he'd had aboard. "They sang at the top of their voices all the way here," he said.

The flights excited the athletes' parents, too. Many parents gathered at departure points to see the youngsters off. Others flew commercially or drove to South Bend to watch the arrivals and the competition.

The parents of a boy on one Citation flight had left Kentucky the day before the airlift and drove all night to be at the South Bend airport for his arrival. They reached South Bend hours before his flight landed, and the father kept busy recording the airlift activity with his video camera. When the Citation carrying their son arrived, it stopped to unload at the far end of the taxiway. A Cessna employee, fearing the parents couldn't get to the airplane quickly enough, put them in a motorized baggage cart and whisked them down the taxiway in time for the boy's arrival to be recorded.

The participating corporations in 31 states and Canada donated the use of aircraft, crews and fuel. Many of the firms were based so near South Bend that flights would have been too short to be effective. But they volunteered to fly Special Olympians from other states.

One corporation that manufactures equipment to aid wheelchair users has had its Citation only a few months.

But the company, whose chairman and president both use wheelchairs, volunteered to pick up Special Olympians in wheelchairs at widely scattered locations.

Cessna Chairman Russ Meyer conceived the airlift last year as a means for business to aid a program he and many other corporate leaders firmly support. After testing the idea on a small number of Citation operators who responded enthusiastically, he began developing the airlift plan.

In addition to soliciting the participation from enough Citation operators to make the program feasible, the plans required coordination with others whose assistance would be vital — the Federal Aviation Administration, airport management at South Bend and Special Olympics directors. The planners met five times in Washington, D.C.

After establishing broad provisions early this year, the planners pondered how best to use the Citations. Marilyn Richwine, Meyer's staff administrator, attended all the meetings, compiled lists of Citation operators, wrote letters and answered questions. She refined the concept into a workable program. Available aircraft were sorted by states. Flight distances were measured and flight times were estimated. Gradually, she developed the intricate schedule used in the airlift.

"It has been almost a full-time job since the first of April," she said. "In addition to keeping the schedule up-to-date in the face of changes, everyone had questions. I was the communications post between Cessna and aviation departments of the participating companies."

"People not in aviation can't have the perspective to understand the magnitude of what we undertook — how much thought, work and cooperation were required from so many people and groups of people. They also can't understand the thrill of seeing that many Citations coming together in one place."

For Meyer, the stress of preparations for the airlift ended with the arrival of the first Citation. "This one girl, a cute little thing, got out, looked around and then announced to the world, 'That was my very first ride in an airplane,'" Meyer said. "That made it all worthwhile."

Fort Worth Diners Can Thank Employee Survey for Innovations By Joe Stout

Several changes in food service operations have been made at Fort Worth in recent weeks as initial measures under the division's employee survey action plan.

Employee response to the changes has been overwhelmingly favorable, with hundreds of employees daily taking advantage of such new programs as an outdoor grill in the division's Rose Garden patio area.

The Rose Garden grill was opened for the first time in early June as a preliminary measure to deal with some of the food service concerns expressed in employee survey responses. Food service was one of the major areas needing improvement, results from the survey showed.

As a further step, Fort Worth's main cafeteria began serving chicken fajitas — a popular Mexican-style dish — from its sandwich service line later in June. Other changes have been implemented at the division's other locations in Fort Worth.

The popularity of the outdoor grill has surpassed Fort Worth's Employee Services Department's expectations from the first day it opened, said Charles E. Moore, manager of the department. The grill has served more than 900 lunches on some days and has been opened even in rainy weather, he said.

Employees say they like the grill service because it is quick and convenient, has good food and gives them a chance to spend a few minutes outdoors.

"I really enjoy it," said Frank Lopez, a Transportation equipment operator in the F-16 factory. "It's nice and shady on the patio, and the food is good."

"I like the grill a lot because the line moves fast and I think the burgers taste better," said Glenda White, Statistical Analyst in the division's Engineering Department. "It breaks up the day to come outside."

"It's a good idea," said Tool Builder Robert Stevenson. "It reduces the line in the cafeteria because you can always breeze through the line outside."

John Saylor, an employee in the F-16 International Program Office, said he tried the outdoor grill for the first time in mid-June and was impressed. "Some of the people I work with had told me that they buy their food outside almost every day and that it's tasty," he said.

The hamburgers served from the grill are priced the same as those served inside Fort Worth's cafeteria, but they taste a little different because they are cooked over real charcoal instead of an electric charcoal broiler, explained Jerrell Coburn, General Manager of Food Services at the plant.

Another employee, Jeff Kincaid of the Planning group, said the grill service "saves having to go home and stoke up the barbeque pit in the evening to get a good burger."

Besides the employees who eat outside at Fort Worth, many others buy food from the grill and take it back to

their work areas. Some are choosing the Rose Garden service as an alternative to bringing lunches from home or going outside the plant for fast food.

J.E. "Bear" Russell, a crane rigger on the F-16 assembly line, said he prefers to eat outside. "You can get a little fresh air so you'll be ready to go back to work when the whistle blows," he said.

The plant cafeteria served chicken fajitas for the first time on June 15th, with serving line personnel adding "pico de gallo" sauce and other condiments to the dishes. On the second day, in response to employee requests, the concept was changed to allow employees to select their own accompaniments from a buffet table. "We're trying to be flexible and serve the food that people want," Moore said.

Because of the continuing popularity of the grill and in response to additional suggestions from employees, soft ice cream and frozen yogurt became available in the Rose Garden area during lunch periods in August. The outdoor grill is also open in the evenings when second-shift employees have their supper break.

Fort Worth employees will see the addition of more new food service programs in coming weeks. "This is just the start. We're going to be doing a lot of things to make the food service better because people asked for that in the survey," Moore said.

Fort Worth Software Will Save Thousands For Air Force Center

The company's efforts to improve cost-competitiveness and productivity can benefit General Dynamics' ultimate customer — the U.S. Government — in more ways than one, as was demonstrated recently by a successful technology development effort at Fort Worth.

The U.S. Air Force's Sacramento Air Logistics Center at McClellan AFB, Calif., will save thousands of dollars annually with electronic signature software, a Fort Worth-developed office automation technology that has been transferred to the Air Force at no cost to the government.

Fort Worth developed electronic signature applications under an Air Force contract to increase the division's office productivity. The technology is being used at Fort Worth to reduce paperwork, cycle times and associated costs in processing special order requests (SORs) for one-time purchasing needs.

By giving managers the capability to authorize the orders electronically — in lieu of signing a piece of paper — Fort Worth is processing SORs on-line. Individuals who use the system have secure "signatures" that cannot be duplicated or applied without authorization.

The electronic special order request and the electronic signature capability were developed by Fort Worth's Business Process Modernization (BPM) group. Earl R. Bristow, Fort Worth's Manager of Office Automation Systems Development and Evaluation, and Delores Geisel, of Data Systems Division Central Center, were also instrumental in the project.

After learning that the technology had been developed, the Air Force's Sacramento Air Logistics Center, which manages support of the Fort Worth-built F-111 aircraft, envisioned its own applications and requested a briefing from Fort Worth. Fort Worth employees Bill M. O'Steen and C. Edward Bridgers gave an electronic signature demonstration to Air Force personnel at Sacramento and provided them with source coding material and technical documents needed for programming the system.

"The demonstration and ensuing technology transfer were resounding successes," said Robert E. Darling, Sacramento Air Logistics Center's Deputy Director of Maintenance. "Savings to the Air Force and the American taxpayer will approximate \$55,000 as a result of this technology transfer."

Since the technology was originally developed under Air Force contract, it was transferred to Sacramento Air Logistics Center at no cost.

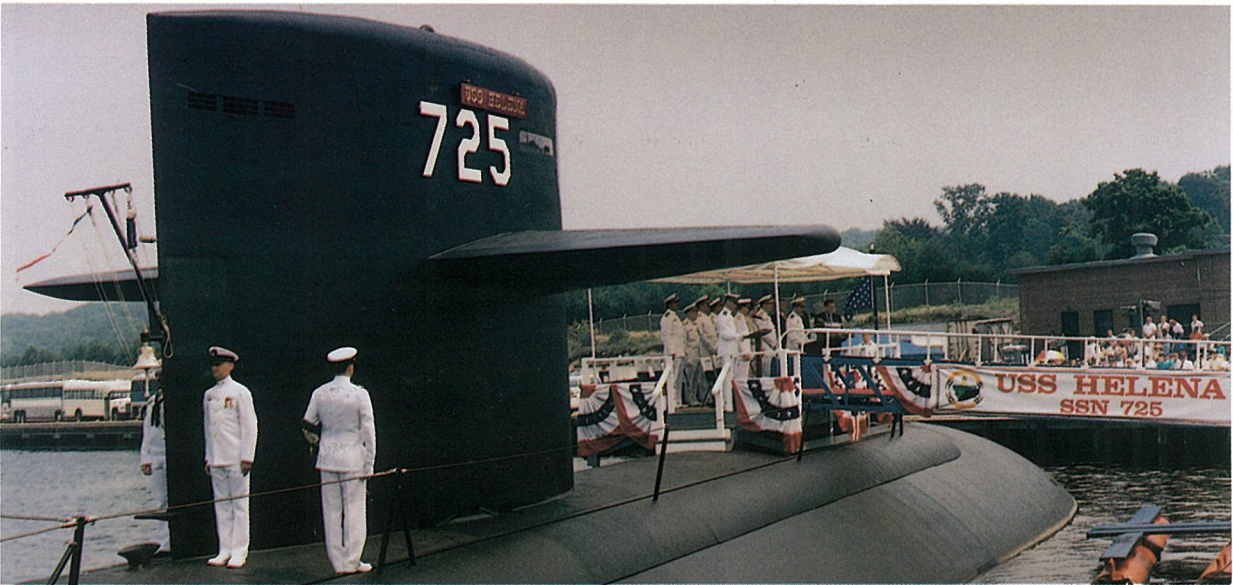
The Business Process Modernization group is chartered with keeping Fort Worth's business processes up to date, said O'Steen, a Program Specialist in the group. Electronic signature technology is typical of processes that might be developed and introduced under the BPM program, he said.

"With BPM, we're taking a close look at procedures to make sure they are in step with the times, are as streamlined as they should be and don't make us do unnecessary work," O'Steen said. "The ultimate goal is a reduction in non-touch (non-manufacturing) labor costs."

The ideas generated by BPM are made available to departments within the division at no cost to their departmental budgets, just as the electronic signature technology was supplied to Sacramento Air Logistics Center at no cost. "We encourage division departments that request our services to think of us as extra staff members who work for free," O'Steen said.

The BPM program is funded under the Air Force's Industrial Modernization initiative.

"The sharing of new ideas within our company, just like our sharing of the electronic signature technology with Sacramento Air Logistics Center, is a prime example of how to create an environment that fosters innovation," O'Steen said. "There are a lot of good ideas out there. The challenge that we all face, in industry and government, is to find the best ways to increase our overall productivity."



The USS *Helena* Joins the Fleet in Traditional Commissioning Ceremony

EB-Built Helena Joins Submarine Fleet By Dave Lange

"It's certainly a *Helena* day." With those words, Cmdr. Thomas W. Moore greeted the sunbathed audience gathered alongside the U.S. Navy's newest ship during commissioning ceremonies at the U.S. Naval Submarine Base-New London, Conn., July 11th. He might have been referring to the high temperature and stifling humidity. But his remark would have been appropriate even in cool, wet weather, for it still would have been a *Helena* day.

Almost exactly 90 years after the original *Helena* entered service, the fourth ship in U.S. Navy history to bear the name was commissioned that morning.

The latest *Helena* carries more firepower than that of the entire Navy of the 1890s. It is loaded with sophisticated Mark 48 antisubmarine torpedoes, Harpoon guided missiles and Tomahawk cruise missiles. Its mission is to hunt down and destroy enemy surface ships and submarines.

"If war comes, we must be able to fend enemy subs off our convoys and battle groups," Adm. James B. Busey, Commander-in-Chief, Allied Forces, Southern Europe and U.S. Naval Forces, Europe, said at the commissioning ceremony. "We must be able to seek out and destroy the enemy's missile-firing submarines. We must be able to do so everywhere, even under the polar cap. There is no better submarine for this mission than *Helena* and her sister ships."

An audience of more than 1,500 persons, including the ship's crew and families and representatives from General Dynamics, the state of Montana and the city of Helena, Mont., heard Admiral Busey's remarks and those from

such distinguished guests as James R. Mellor, General Dynamics Executive Vice President-Marine, Land Systems and International.

Noting that the *Helena* is the 17th consecutive ship delivered ahead of schedule by Electric Boat, Mellor said, "General Dynamics is very proud of the men and women of our Electric Boat Division, whose skills produced this fine ship."

The *Helena* is the 22nd SSN 688-class submarine completed by Electric Boat, which also builds Trident missile-firing submarines. The *Helena* is 360 feet long and 33 feet wide and carries a crew of 13 officers and 114 enlisted men.

Vice Adm. Daniel L. Cooper, Commander Submarine Force, U.S. Atlantic Fleet, commissioned the *Helena*.

The morning's activities included remarks from George Turman, Lieutenant Governor of Montana; Ron Marlenee, U.S. Representative from Montana; Russell J. Ritter, Mayor of Helena, Mont.; Capt. Robert E. Fox, Supervisor of Shipbuilding, Conversion and Repair; and Mrs. Jean Cole Busey, Admiral Busey's wife and sponsor of the *Helena*.

Also on hand were former crew members of the second and third *Helenas*. The second *Helena*, a light cruiser commissioned in 1939, returned fire at Japanese planes that attacked Pearl Harbor on Dec. 7, 1941, and earned seven battle stars and the first Navy Unit Commendation ever awarded before it was sunk by three Japanese torpedoes in July 1943. The third *Helena* was a heavy cruiser commissioned in 1945 that participated in the Korean War and won four battle stars and the first Korean Presidential Unit Citation awarded to a naval unit.

Fort Worth Delivers First F-16D to Turkey

The Air Force of the Republic of Turkey took delivery of its first F-16D aircraft recently in ceremonies at Fort Worth.

Acceptance papers for the two-seat Fighting Falcon were signed by Lt. Gen. Halis Burhan, Chief of Staff of the Turkish Air Force. The aircraft is the first of 160 Fighting Falcons that will be delivered to the Turkish Air Force by December 1994.

The first eight Turkish F-16s will be delivered from Fort Worth, while 152 will be built in Murat, Turkey, by TUSAS Aerospace Industries (TAI), a joint venture company that is Turkish and American owned. The first F-16 is scheduled to be delivered from the TAI factory in early 1988.

In accepting its first F-16D, Turkey became the 11th nation and the 12th air force with the F-16 in its inventory. Turkey is the fifth nation including the United States to receive F-16C/D Fighting Falcons.

Sukru Elekdag, Turkish Ambassador to the United States, said the Turkish F-16 program is "the single largest defense industrial project ever initiated by Turkey with a foreign entity."

"We require a secure peace along our borders to enable us to consolidate and build upon the hard-won achievements we have realized thus far," Elekdag said. "For this, Turkey's defense preparedness should be effective and the NATO alliance's deterrence should be credible. The F-16 project will contribute to both of these goals."

General Burhan said the F-16 program has strengthened Turkish and American relations and given new dimensions to Turkey's role in NATO. "A strong Turkey, possessing a sound economy and military posture, will be an effective



Elekdag

factor of stability and regional security," he said.

"Besides providing 160 high performance aircraft for Turkey, this project also has important benefits for the economic progress of the country," General Burhan noted. "As a result, Turkey will gain experience in modern aircraft technology, production, maintenance and repair. Undoubtedly, this experience will enable the Turkish Air Force to produce more sophisticated weaponry and combat aircraft in the 21st century."

Rep. Marvin Leath, representing the U.S. Congress, said Turkey is "the key country for support of U.S. strategic interests and the interests of the free world" in the region, which includes the passage between the Black Sea and the Mediterranean. "The introduction of the F-16C/D (to the Turkish Air Force) is a prime example of the right thing (for the United States) to do for Turkey," Leath said.

The U.S. Air Force was represented at the ceremony by Brig. Gen. Donald L. Kaufman, Director of International Programs, and Maj. Gen. Robert D. Eaglet, Aeronautical Systems Division's F-16 Program Director.

"I think the Turkish F-16 program truly represents the best of what can be achieved through security assistance, bringing together the air forces, industries and people of two countries," General Kaufman said.

General Kaufman has flown the Convair-built F-102 and F-106 and the Fort Worth-built F-111. He was recently trained as an F-16 pilot. "The fighter pilot can probably receive no greater thrill or capability than to be current and combat ready in this airplane," he said of the F-16.

Herbert F. Rogers, Executive Vice President-Aerospace, said the joint venture project has "taken a wheat field and built an aircraft factory" in Turkey. Rogers noted that the Turkish factory is a smaller-scale replica of the F-16 factory in Fort Worth.

While two assembly lines in Europe have produced F-16A/B Fighting Falcons, the TAI factory will be the first besides Fort Worth to produce F-16C/D aircraft.

Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	June 1985	June 1986	June 1987
Salaried			
Government Bonds	16.4%	12.9%	6.4%
Diversified Portfolio	36.8%	37.6%	27.6%
Fixed Income	12.4%	12.2%	11.8%
Hourly			
Government Bonds	16.4%	12.2%	6.6%
Diversified Portfolio	36.3%	38.7%	28.9%
Fixed Income*	N/A	12.1%	11.8%
GD Stock Closing Price	\$74.38	\$76.50	\$66.75

* Fixed Income effective 6/30/85

Odd Anderson Honored for Bravery Behind Nazi Lines in World War II

Odd Anderson, at the age of 20, was almost the "odd man out" many times as he fought with the Office of Strategic Services (OSS) against the Nazis in German-occupied Norway during World War II.

Today, Odd is Sales Manager, Central Steel Division of Marblehead Lime and has been with the company for 24 years.

Odd doesn't often talk about his wartime exploits, which have gone unheralded for 40 years. But he had occasion to recall some of his harrowing experiences recently when the Norwegian Government awarded him its War Participation Medal for extraordinary bravery in helping fight the Germans in Norway.

Odd was awarded the medal by King Olav of Norway, an occasional drinking companion of Anderson's when the then future monarch was training in Scotland with Norwegian troops.

The medal was presented on June 30th by Norwegian Ambassador Kjell Eliassen and his Defense Attache, Maj. Gen. Magne T. Sorensen, at the Royal Embassy of Norway in Washington with former CIA Director William Colby and other dignitaries present.

"Norway thanks you for your efforts for freedom," the citation from King Olav said. "The Norwegian people regret this wasn't awarded at an earlier date," General Sorensen added.

In 1943, when he parachuted into Norway along with 19 other OSS men led by then Army Major Colby, Anderson didn't know if he would live long enough to hold a civilian job back home.

He was recruited out of Evanston (Ill.) High School by the U.S. Government to train for the OSS infiltration forces. His good grades, splendid physical condition and ability to speak fluent Norwegian — his family emigrated from Stavanger, Norway, before he was born — were criteria the OSS was looking for.

Odd's job, among others, was to blow up bridges, railroad tunnels, railroad cars and German military emplacements after parachuting into Norway from an American bomber.

After receiving his medal, he shared one recollection with Colby and the others in attendance. "We were going to blow up a bridge," he said, "and Colby asked, 'Odd, would you run up and the rest of our people will cover you.' I got obsessed with this bridge. I carried 50, 60 pounds of plastique, ran across and planted the demolitions, and then Bill (Colby) withdrew us behind a little embankment. I stood up to see the bridge blow, and Bill shoved me back to the ground. Forty years later, Bill, thanks for saving my life."



Forty Years of Memories. Odd Anderson of Marblehead Lime (right) leans across Norwegian Ambassador Kjell Eliassen to shake hands with former Central Intelligence Agency (CIA) Director William Colby (left), who led his OSS unit into Norway in World War II to aid Resistance units. Anderson wears the War Participation Medal that he had just been awarded by the Norwegian Government at an embassy ceremony in Washington.

Some of Anderson's comrades who went down in OSS troop-carrying planes that crashed into the icy mountains are buried in a mountainside cemetery near Narvik, and Odd and his former buddies send money every year to a nearby church that maintains the graves.

The last official wartime act of Anderson's group was to dictate the terms of surrender of a Junkers Ju 87 dive bomber base outside of Trondheim right after VE Day. Odd escorted the Nazi officers out by machine gun.

Anderson lives with his wife, Nancy, in Kenilworth, Ill. They have a son, William, a professor of economics at St. Michael's College in Vermont, and a daughter, Mrs. Lynn Calloway of Crested Butte, Colo.

Still militarily erect with a proud bearing and a twinkle in his eye, Odd likes his job with Marblehead and doesn't plan to retire. "It's a fulfilling job and I'm happy to be with a company that has made so many contributions to the growth of the city of Chicago and to the nation," he said.

Lima Army Tank Plant Is Cited for Energy Savings

The Lima Army Tank Plant won the Army Material Command's (AMC) annual Energy Conservation Award for Fiscal Year 1986.

The Lima entry beat out all other AMC entries from both the government-owned/contractor-operated plants and the government-owned/government-operated plants and will represent more than 60 AMC facilities in the upcoming annual Secretary of the Army Energy Conservation Award competition.

Robert Monroe, Energy Environmental Engineer in Cross Services, prepared the Lima entry. The submission comprised 12 conservation programs and 21 energy projects developed and implemented totally at the local level.

"The cooperation of all Lima personnel, especially those in Plants 1 and 3, Engineering and Maintenance made this significant recognition possible," said Joseph F. Manzi, Cross Services Manager.

DSD-Western Center Completes Ethics Awareness Refresher By Julie C. Andrews

Data Systems Division-Western Center employees recently completed ethics refresher training. Challenged by Center Director Paul M. Cofoni to provide the refresher training to all 1,800 Western Center employees during June, members of Western Center management began conducting half-hour sessions during regular staff meetings.

"Although a formal corporatewide ethics training program for current employees was not planned for 1987," said Cofoni, "I asked each of the Western Center supervisors to personally conduct ethics refresher training. The General Dynamics Standards of Business Ethics and Conduct booklet is the core of the ethics program, and it defines certain responsibilities supervisors have, one of which is to periodically review employee knowledge and understanding of the booklet."

As Manager of Engineering Systems at Western Center, Roger E. Barnes used his regular weekly staff meeting to conduct the refresher. Barnes is also Western Center's Ethics Program Director in San Diego. He led off his session by stating that the ethics program does not revolve exclusively around the Ethics Program Director.

"Our ethics program rests on individual employees asking the right questions and getting the right facts to solve dilemmas," Barnes said. "The prime source of assistance is the supervisor, and the ethics booklet is still the basic standard on ethics."

The Engineering Systems staff reviewed the ethics booklet with emphasis on the supervisor's responsibility to see that new employees are trained in ethics awareness, and on employee responsibility to complete accurate expense reports and time cards.

Barnes reinforced the idea that ethical dilemmas must be solved internally and reviewed the appropriate division standard practices and corporate policies. If an employee has a concern about confidentiality, he said, the ethics, personnel and Department of Defense hotlines are available. The telephone numbers are posted throughout all plant locations.



Roger E. Barnes, DSD-Western Center Ethics Program Director, Offers Refresher to His Staff

The refresher concluded with questions and answers, including discussions on issues of special concern to Engineering Systems, which is responsible for engineering analysis application software development and special-purpose computer facility management. They also provide advisory assistance to engineering users of large mainframe computers. Because Engineering Systems employees interact with vendors, the refresher also re-emphasized the proper contact with suppliers.

The group also discussed the appropriate use of company computers. Western Center's Quality Assurance

department recently circulated a flyer to all San Diego divisions listing the guidelines on computer equipment and software use.

Although the basic ethics program points were covered in the sessions throughout Western Center, supervisors were urged to keep in mind the specific concerns of their departments.

"We feel that using supervision to conduct the ethics refresher will help tailor the content to the needs of the individual groups and provide greater opportunity for group interaction," Cofoni said.

Agile Falcon Proposed

(Continued from Page 1)

"The program continues the emphasis on affordable, reliable, true multirole capability, offering substantial improvements in both air-to-surface and air-to-air capability," he said.

"This program will take full advantage of the substantial investments already made by the Air Force in improved propulsion and avionics systems. In addition, it continues to derive the benefits of interoperability, logistics support, and training with our allies around the world who are operating F-16s," he said.

Pace said the proposal calls for the Agile Falcon to be "designed, developed and produced as a Joint Multi-national Program by the five original F-16 partners — Belgium, Denmark, the Netherlands, Norway and the United States — under a shared funding arrangement."

"For our four European partners, it offers an important opportunity to share in the design of the F-16 upgrade and to participate in the production phases of this program, thereby building on the extremely successful coproduction capability already in place," Pace said.

"Facing the same improved threat, they too are beginning to consider various developing tactical fighter options available to them from other countries over the next several years," he said. "We are convinced that the proposal offered here will provide for them a tactical fighter of greater capability and performance than these fighter options at a much lower cost and risk, and at an earlier time than any alternative aircraft being offered."

Pace added that the program "offers flexibility for each country to tailor it to its own force structure while maintaining the degree of desired commonality and logistics support."

The cost for the upgrade codevelopment, test and production tooling is estimated at about \$600 million, depending on the final selection of configuration and system options. For the Europeans, the Agile Falcon program would represent substantial savings over the costs of several billion dollars for developing, producing and deploying a new fighter.

Unit flyaway cost of the Agile Falcon would be about \$2 million higher than the current USAF F-16 unit cost of \$13 million.

The proposal calls for a program to begin in January 1990 with the first production aircraft delivered to the USAF and the European Participating Government (EPG) air forces in 1995. The Agile Falcon upgrade would be incorporated within the existing USAF procurement plan and no additional U.S. aircraft quantities would be required.

RAM Production . . .

(Continued from Page 1)

that come with trying out new methods of international cooperation. It is important to note that this agreement is the first in which the U.S. will take a program from cooperative development through to cooperative production."

Under the agreement, Valley Systems and RAM Systems GmbH, the West German consortium, will compete annually for the major portion of the U.S.-German buy, with the loser awarded sufficient quantities to maintain a viable production line.

The first production units will be delivered in 1991. The German Navy will receive 1,923 of the total of about 6,800 missiles planned for production. Valley Systems will serve as prime contractor for all 90 of the shipboard command and launch systems planned for production, 58 of which will go to Germany.

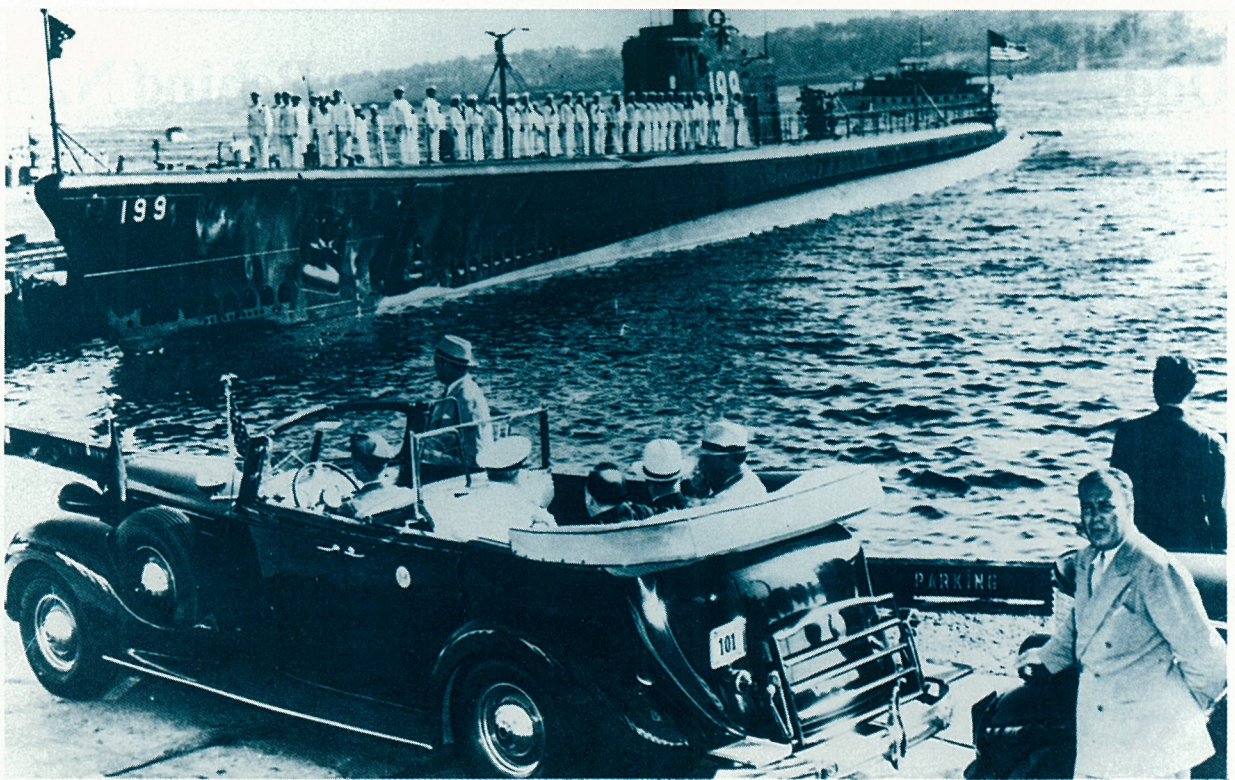
Woerner called the MOU "a trendsetting milestone for the German/U.S. two-way street in armaments matters."

"The most noteworthy feature of this MOU is that by concluding it, we have achieved a first breakthrough on the road toward fair competition between our national defense industries," Woerner said.

Asserting that the RAM program "has very real benefits for both our countries," Weinberger said: "We will pool our procurement requirements for joint purchases each year. Economies of scale will reduce our costs. We will have two production sources — one in the U.S., the other in Germany — for missile components unique to RAM. These sources will compete for joint procurement contracts, helping to keep costs down. We will have two active production bases and industrial benefits to both nations."

"This innovative approach is challenging for industry, so I want to say how much we appreciate the positive attitude taken by industry leaders on both sides of the Atlantic," he said.

Weinberger noted that Denmark also participated in the early development phase and remains an inactive partner in the program.



Presidential Inspection. President Franklin D. Roosevelt (right rear in touring car) inspects the *Tautog* during a visit to the New London, Conn., submarine base in 1940.

GD Flashback

WWII Tautog Sank Most Enemy Ships By Chris R. Schildz

Submarines built by Electric Boat inflicted heavy damage on the enemy in World War II, but the champion of them all was the USS *Tautog*, which sank the most ships — 26 — of any U.S. submarine in combat.

Tautog was a member of the class of 1940 — the *Tambor* class. Twelve distinguished graduates made up the *Tambor* class, six of which were built at Electric Boat in Groton, Conn. Those subs included the *Tautog*, namesake *Tambor*, *Thresher*, *Gar*, *Grampus* and *Grayback*.

When U.S. statistics were compiled and verified with Japanese sources at the end of World War II, historians found that *Tautog* had finished first in its elite class.

Not only did *Tautog* achieve the record for the greatest number of enemy ships sunk, but it also shot down a Japanese plane and sank two Japanese submarines.

Altogether, Groton-built submarines accounted for 39 percent of all Japanese ships sunk — 1,178 merchant vessels and 214 warships. Another Electric Boat submarine, *Flasher*, grabbed the record for tonnage sunk (100,231).

Tambor submarines, equipped with diesel-electric generators, had a maximum operational design depth of 250 feet, but the subs were constantly modified with new gear during the war. Radar was eventually fitted on *Tambors* and the three-inch deck gun mounted on all boats in 1941 gave way to either four- or five-inch guns later in the war.

The subs had a maximum speed of 20 knots on the surface and over eight knots submerged. There were 10 21-inch torpedo tubes, six forward and four aft. Each boat had a range of approximately 10,000 miles at 10 knots surfaced.

Tautog got off to an auspicious start in World War II by becoming the first submarine to down a Japanese plane. *Tautog* had just returned from a long peacetime patrol off Midway Island when it arrived at Pearl Harbor in early December 1941. It was moored with *Narwhal* and *Dolphin* at the sub base finger piers on that fateful "day of infamy" on Dec. 7th. *Cachalot*, the remaining sub at the base, was undergoing repairs in the navy yard.

"When the first Japanese planes appeared, the crews on all four subs ran to battle stations, setting up .30- and .50-caliber machine guns," according to an account in *Silent Victory* by Clay Blair Jr. "When a Japanese plane came low over *Tautog*, William Bernard 'Barney' Sieglaff, its duty officer at the time, coolly directed enlisted gunners manning a .50-caliber machine gun. The tracers climbed upward into the plane's fuselage, and the plane burst into flame and crashed into the water, 50 yards off the sub base piers."

The first of three commanders of the *Tautog*, Joseph Harris Willingham, nearly lost his submarine to a Japanese counterpart while en route to the Marshalls in the early days of the war.

Proceeding on the surface April 26, 1942, *Tautog's* officer of the deck sighted a periscope "opening out, preparatory to firing." The officer ordered hard left rudder and called the crew to battle stations. When the stern torpedo tubes came into position, Willingham fired a single torpedo. It either hit or exploded magnetically above the Japanese submarine. Willingham flashed a message to a passing patrol plane to investigate. The pilot reported boxes, cushions, and other debris floating on the water. RO-30, a 1,000-ton submarine, was stricken from the Japanese navy list, the first of many in 1942 to come to a similar fate. In all, Japanese forces lost 23 subs, six of them sunk by American submarines.

In another patrol later that year, *Tautog* planted mine fields along the coast of Indochina. When the sub returned to Pearl Harbor, Willingham was decorated with his second of two Navy Crosses and given a new command aboard the *Bowfin*.

The seasoned *Tautog* skipper was relieved by "Barney" Sieglaff, the same man who had helped shoot down the Japanese plane at Pearl Harbor.

Sieglaff earned an aggressive reputation on his first patrol, damaging a light cruiser and sinking two other ships. He continued to be aggressive on later patrols, usually carrying a mixed load of mines and torpedos.

He laid a minefield off Balikpapan, in Makassar Strait, and, although no Japanese ships struck the mines immediately, the destroyer *Amagiri* was said to have been sunk by one of these mines in April 1944, according to Blair's account. (*Amagiri* was the destroyer that rammed and sank PT-109, commanded by John F. Kennedy.)

Sieglaff directed *Tautog* through six patrols, sinking 13 ships, including two destroyers. Toward the end of the war, he was replaced by Thomas Baskett.

Tautog made her final combat patrol in the East China Sea as one-half of a two-boat wolfpack. *Tautog* joined *Silversides*, commanded by John Culver Nichols, in preying on Japanese ships. Baskett sank a 1,500-ton transport and a 1,800-ton PT-boat tender in this last tour, sinking a total of eight ships during his tenure.

"We prided ourselves in still being around at the end of the war," said Baskett. "We were one of the oldest fleet subs left." There were 12 in *Tautog's* class and seven were eventually sunk.

"I took pride in never 'overcalling' the tonnage," Baskett said. "I always tried to accurately identify the ships we sank. On several occasions we picked up survivors — one time we picked up more than we could handle. We put them on a life raft and dropped them off on a large island."

"But I never heard about our record for ships sunk until after the war."

Tautog was decommissioned in 1945 and was used as a Naval Reserve Training vessel until 1959. It was stricken from the Naval lists that year when it was sold for \$45,000 to Bultema Dock & Dredge Company of Michigan.

John Bultema, a former president of Bultema Dock & Dredge and a former World War II submariner, put in the winning bid for the aging submarine. "I was hoping to raise the money for a national shrine at the Milwaukee (Wis.) Public Museum, but we had to eventually scrap her out. I sent the *Tautog's* periscope, torpedo door, sonar and helm wheel to the museum in Milwaukee."

In 13 *Tautog* war patrols, Willingham, who died in 1948, destroyed five ships, including two subs; Sieglaff, who currently resides in Vermont, destroyed 13 ships including two destroyers, and Baskett, eight ships.

Tautog's remaining parts were transferred back to the Navy in the early 1970s, according to a spokesman at the Milwaukee Museum. But, even though the sub has been reduced to pieces of memorabilia, *Tautog* is more than just a memory for the men who served aboard her.

GENERAL DYNAMICS World

Volume 17 Number 9 September 1987

U.S. Navy Tomahawk Demonstrates Dive Mode of Attack

A U.S. Navy Tomahawk cruise missile equipped with a live warhead demonstrated its terminal dive mode of attack in a successful flight test on Aug. 26th. Launched from a submarine off the coast of Southern California, the missile flew a 400-mile land-attack mission to San Clemente Island, where it struck a warehouse-sized concrete structure.

The terminal dive maneuver allows the Tomahawk to increase its altitude just before reaching its target and to dive on it from directly above. This attack mode is effective against targets surrounded by trees or other structures. This was the first demonstration of terminal dive using a live warhead.

In another successful test flight on Aug. 25th, a Tomahawk land-attack missile with a submunitions dispenser demonstrated its ability to engage multiple targets. The missile was launched from a surface ship off the coast of California and flew a mission of approximately 500 miles to the China Lake test range. This test was one in a series of developmental flight tests of the Tomahawk submunitions dispenser.

(See Related Photos on Page 3)

Company Ad on Page 10

Another in a series of advertisements the company is currently running in major newspapers and national magazines is displayed on Page 10 of this issue.

Favorable Responses To Ethics Program Received by Company

Since its inauguration on Aug. 13, 1985, the General Dynamics Ethics Program has received favorable attention from the company's customers, in the halls of Congress, in the nation's news media and among educators interested in the integration of ethical awareness and practices into the business life of American corporations.

"Coupled with tremendous support for the Ethics Program from our employees, the positive reactions from a variety of concerned external constituencies have helped us maintain the momentum and viability of the program," said Stanley C. Pace, Chairman and Chief Executive Officer. "At this juncture in the life of the program, it is vital that we continue to build on the awareness, knowledge and commitment that we have gained in the past two years."

During these years, officers from U.S. military services conducted thorough reviews of the General Dynamics Ethics Program. A team from the Air Force Contract Management Division visited Fort Worth last June and rated the program's implementation as "excellent." In the cover letter accompanying the report of the Fort Worth visit, Col. Robert E. Briggs, USAF Plant Representative, added that the program could "become a model for the industry."

A presentation of the program to a meeting of the Naval Aviation Executive Institute Board by Kent Druyvesteyn, Corporate Ethics Program Director, resulted in a similar reaction. The board's chairman, Maurice L. Higgins, wrote to Druyvesteyn that "Vice Admiral (Joseph B.) Wilkinson, (Commander, Naval Air Systems Command), was so impressed by the very successful program at General Dynamics that he plans to implement a similar program for the Naval Air Systems Command."

Another favorable response came to the program from Charles E. Bennett, U.S. Representative from Florida, who wrote to Pace: "I deeply appreciate the efforts your company is making to achieve high ethical standards." Druyvesteyn cautioned that "while we can be proud of our

(Continued on Page 9)



Christening Ceremony. Champagne bubbles fly after Pauline Louise Trost, left, douses the USS *Pasadena* with a bottle of California domestic. Witnessing the bottle-breaking are, left to right, Mrs. Laura Lee Carrico, Matron of Honor; Stanley C. Pace, General Dynamics Chairman; Adm. Carlisle A. H. Trost, Chief of Naval Operations; John S. Crowley, Mayor of Pasadena; the Hon. Samuel Gejdenson, United States Representative from Connecticut; Vice Adm. Bruce DeMars, Deputy Chief of Naval Operations (Submarine Warfare); Rear Adm. Walter H. Cantrell, Deputy Commander for Submarines (Sea 92), Naval Sea Systems Command; and Rear Adm. Larry G. Vogt, Commander of Submarine Group Two. Kathleen Trost, Maid of Honor, not visible in the photo, is behind Pace.

Submarine Pasadena Is the Main Attraction At a Naval 'Coming Out Party'

By Chris R. Schildz

The 24th SSN 688-class fast-attack submarine built by Electric Boat — the USS *Pasadena* — made her debut in the maritime version of a "coming out" party on the Thames River at Groton, Conn., Sept. 12th.



Adm. Carlisle A. H. Trost

More than 8,000 people watched the 360-foot-long submarine make a graceful slide down greased launch ways into the river after Mrs. Pauline Louise Trost, the ship's sponsor, shattered a bottle of California champagne on *Pasadena's* bow.

Prior to Mrs. Trost's dousing of the ship, her husband, Adm. Carlisle A. H. Trost, thanked Electric Boat employees "on behalf of the U.S. Navy for all that has been done in support of this country's seapower."

Admiral Trost, Chief of Naval Operations and principal speaker at the ceremony, cited the historical contributions made by the Electric Boat shipyard.

"What this ship means for us today is another down payment on the defense of our country and the future security of our government," he said.

Admiral Trost also directed some of his remarks toward those who have criticized the Navy's submarine program. "It has become fashionable this year to be critical of the capabilities of ships like this," Admiral Trost said. "I challenge those critics because I know better. . . . The truth is . . . that this ship is built and designed to meet the challenges she'll face throughout her lifetime."

"I am convinced that with a strong Navy and ships like

the *Pasadena*, we will be able to master the challenges," he said.

A number of officials from Pasadena, Calif., whose city annually plays host to the prestigious Rose Bowl college football game, attended the ceremony.

"This is a great day for us," said John Crowley, mayor of the southern California community. "The USS *Pasadena* — doesn't that have a nice ring to it?"

Mayor Crowley cited the two previous U.S. Navy ships named for the California city. The first *Pasadena* was a cargo ship that carried war material between the United States and Europe in the closing months of World War I. The second *Pasadena*, a light cruiser, was built by Bethlehem Steel Co. in Quincy, Mass., and launched in 1943.

The ship fought in various campaigns in the Pacific and earned five battle stars during World War II.

Master of ceremonies at the *Pasadena's* christening was Stanley C. Pace, General Dynamics Chairman, who said that launchings are where the "Herculean efforts of thousands of people come together in a spectacular fusion of technology and the shipbuilders' art."

Joining Pace on the podium were Admiral Trost; Mayor Crowley; Rear Adm. John S. Claman, the Navy's Supervisor of Shipbuilding at Groton; the Hon. Samuel Gejdenson, United States Representative from Connecticut; Fritz G. Tovar, Vice President and Electric Boat General Manager; and Vice Adm. Bruce DeMars, Deputy Chief of Naval Operations - Submarine Warfare.

Other dignitaries on the podium were Mrs. Trost, Rear Adm. Larry Vogt, Commander of Submarine Group Two;

(Continued on Page 3)



The USS *Pasadena* Slides into the Thames River at Groton, Conn., as Onlookers Cheer



Top Level Driver. Stanley C. Pace, Chairman and Chief Executive Officer, gives a "thumbs up" signal after driving an M1A1 tank during a recent visit to Land Systems' Lima Army Tank Plant. When asked to compare the experience with that of his recent piloting of an F-16, he said he enjoyed them both and was glad to follow the tank instructor's advice "to avoid the slow roll I executed in the F-16."

Two Appointments Of Key Executives Are Announced



Eastburn



Lamberson

Key executive appointments have been announced by the Fort Worth and Electronics divisions.

Robert Eastburn Jr. has been named Division Vice President-General Counsel at Fort Worth, where he has served as General Counsel since 1985. He previously served seven years as Vice President and Director of Legal and Contracts at a division of ITT Corporation. He holds a bachelor of arts degree from the University of Delaware and a Juris Doctor degree from the University of Chicago. Eastburn served in the U.S. Army after graduation from law school. He commanded a transportation company in Vietnam and was a judge advocate in Germany and Washington, D.C.

Roger E. Lamberson has been appointed Division Vice President-Material at Electronics Division. He joined Electronics in 1986 as Director of Material. He began his career in the operations and material management fields in 1965 with Rohr Industries. In 1976, Lamberson joined Cubic Corporation as Manager-Manufacturing Control. From 1979 to 1984, he held positions of increasing responsibility in Operations Management at Datagraphix, Inc., a former General Dynamics subsidiary. He was Director-Material Operations at Loral Instrumentation from 1984 to 1986. Lamberson attended San Diego City College and San Diego State University.

High School Students Get Career Guidance

Fourteen high school students in the Troy, Mich., area have completed a program about secretarial/word processing careers that was a joint effort of Land Systems and the Explorer Division of the Boy Scouts of America.

The students toured the Land Systems facilities, received presentations on job application techniques, witnessed a demonstration of word processors and the electronic mail system and learned about booking executive travel.

Guiding the students through the program were 10 secretaries from Finance, Engineering, Marketing, Ethics and Human Resources.

Current & Comment

(Observations of interest to the company and the industry will appear regularly in this column.)

* * *

INDUSTRY PACS/WATCHDOG PACKS — You probably wouldn't want to contribute to the Presidential campaign fund of 38-year-old James R. Messenger of Piscataway, N.J. But you could if you wanted. And you could do it through the company's political action committee (PAC), known as the General Dynamics Voluntary Political Contribution Plan.

Without getting too deeply into all of the specifics of the six pages and five appendices in the Corporate Policy and Procedure which cover this topic, suffice to say that the VPCP is an easy way for employees (or shareholders) to give, if they want to, to selected political candidates. And, as the CPP states right up front, it's all done by the book. The committee is strictly voluntary and nonpartisan. It's organized and registered with the Federal Election Commission, and its reports are filed with and available from that commission. The distribution of funds is as directed by the Federal Election Act — and all of the operating costs are recognized as expressly unallowable costs and excluded from allocation to government contracts.

The Plan is restricted to those who are eligible and who sincerely want to give. And it's all very clear. It allows the giver to contribute either through what is called the Common Fund or through an individual account. Under the individual account, the employee must identify exactly who gets the contribution. As permitted by law, the company acts as a conduit for all individual contributions designated for any one candidate.

Political action committees like the VPCP are an acknowledged and legitimate way for employees of American companies — whether defense contractor or cookie manufacturer — to support, not surprisingly, a candidate or party whose priorities identify with their own. And this is also spelled out right there in the CPP:

"The GDVPCP Committee . . . determines which candidates or political entities receive contributions from the Common Fund based upon information such as constituent relationships, committee assignments, political philosophies and general adherence to the standards and goals shared by the industry."

Having political preferences and acting legally on these preferences, however, is not always acceptable to other groups with opposing philosophies. "It's OK if we lobby," they say, "but you cannot."

One such single-minded group is Common Cause, perceived by many as the pit bull of the Washington "watchdog" packs whose reform agendas push their members' own personal (and basically liberal) sympathies. In their recently published "Top Guns," a 111-page "Guide to Defense Contractor Lobbying," Common Cause calls for a range of "reforms for curbing defense contractors' political influence." While there is already a \$5,000 ceiling on

committee contributions to any one federal candidate, Common Cause would like to go a step further by applying that ceiling to the total amount that a candidate can receive from a PAC fund and from employees. The intent here, of course, is to do away with laws allowing the PAC plan to forward all individual employee contributions to any candidate they so designate.

Self-declared reformists notwithstanding, you are still free to use the Plan's individual account to put your money where your politics are. You can mark your gift for a front-runner in any party, or even to help finance such dark horse hopefuls as Messenger, who is a supporter of settling people in outer space to relieve overcrowding on Earth and whose press kit explains "I possess a powerful and well-educated mind."

* * *

"... AN INVESTOR RELATIONS PROGRAM THAT IS INFORMATIVE, CANDID AND OPEN." —

That's how General Dynamics' 1986 corporate reporting and communications practices were described by the Aerospace Subcommittee of the Financial Analysts Federation Corp. Information Committee. The group's annual review of 11 aerospace companies ranked GD second in quality for its annual report and Form 10K, and a close third (behind Lockheed and Northrop, who tied) in overall reporting and analyst relations activities. Said the subcommittee: "The discussions of programs in the annual report are thorough, and . . . the company also provides an understandable discussion of the Tax Reform Act of 1986, an important factor affecting future profitability and cash flows. In general, the annual report is of superior quality."

* * *

A MATTER OF FACT — Despite the fact that appeal litigation in the case continues, CBS News' "60 Minutes" is hurtling forward with its plans (see June 1987 *General Dynamics World*) to air a story in October on the 1983 accident of F-16 pilot Capt. Ted Harduvel and subsequent lawsuit against GD by Janet Harduvel.

The company has asked the producer to include the following statement from Herbert F. Rogers, Executive Vice President-Aerospace, reflecting the company's position:

"The Plaintiff's case is based upon the assumption that a fire caused the loss of electrical power.

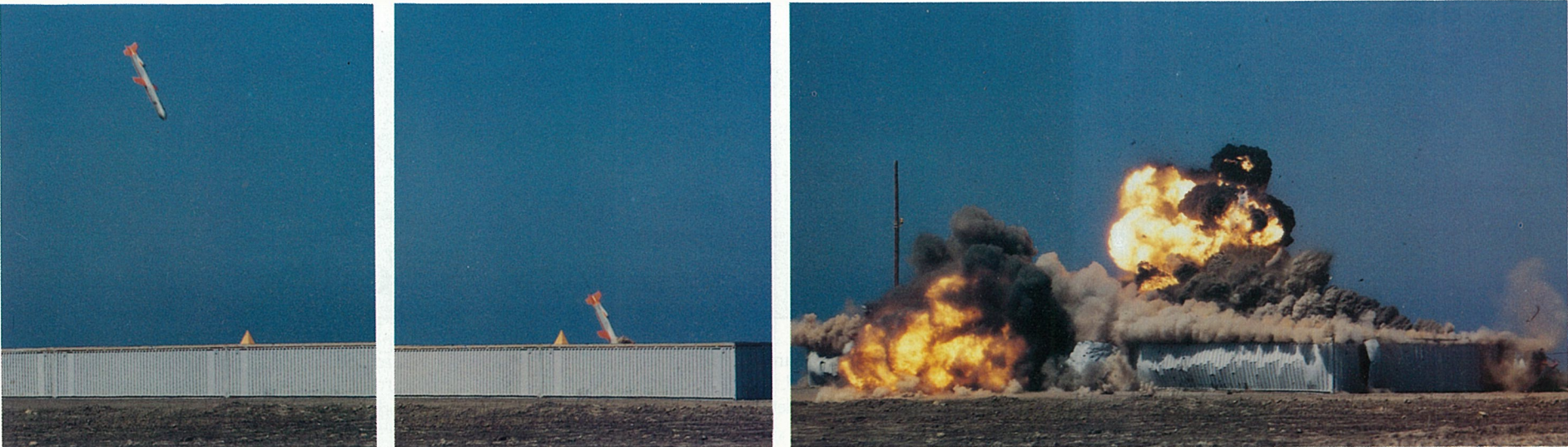
"The facts are: 1) When the Captain left the formation, his wingman saw no smoke coming from his plane, and 2) there was no indication or evidence of fire in the wreckage of his F-16.

"We believe the evidence and testimony clearly show that the cause of the accident was due to pilot disorientation, possibly brought on by recent medication."

Will 60 Minutes respect this request? The jury is out on that one, as well.



Checking Repairs. Gene Rope, a test engineering specialist in the Antenna and Radome department, tests a radome in an anechoic test chamber in an Electronics Division plant in San Diego. An array of receiving antennas used in the diagnostic tests is located in front of the radome. Electronics Division is developing test equipment using sensors to probe radiation passing through repaired radomes to evaluate the effects of the repairs.



U.S. Navy Tomahawk Demonstrates Its Terminal Dive Mode of Attack Against a Warehouse-Sized Structure on San Clemente Island Off the California Coast

Many Actions, Simple and Complex, Being Taken on Survey Matters

Managers throughout General Dynamics are acting on issues raised by the more than 22,000 hourly workers who participated in the Employee Survey. Some actions have been as simple as replacing steel wheels on paint carts with polyurethane wheels to reduce noise at Cessna. Others involve complex planning to better coordinate people, material and schedules at Valley Systems.

Whatever the action, the result will make General Dynamics a better place to work, thanks to those who responded to the Employee Survey.

Some issues and actions include:

Issue: Lack of adequate tools and equipment

Action: The Operations Department at Electric Boat is reviewing the number and location of tool rooms, upgrading its equipment maintenance program and replacing worn and outdated tools. Equipment innovations also are being explored.

At Quonset Point, major efforts are under way to purchase state-of-the-art tools and equipment. Employee teams will help evaluate equipment purchases.

At Electronics Division, a multiphase awareness program is addressing employee concerns and fostering specific tool improvements.

At Convair, employees who use tooling equipment on DC/KC10 aircraft programs are working closely with toolmakers and engineers to upgrade the tooling.

Issue: Improved working conditions

Action: Concerns by sheet metal shop employees at Quonset Point about smoke and fumes from aluminum welding prompted installation of a new hood and blower for faster and more effective ventilation.

Cessna and Pomona have installed a new style of lighting in work areas; division management at both locations are determining the most effective color of lighting and its impact upon productivity.

At Valley Systems, employees wanted better communication and timely feedback on performance. With those concerns in mind, quality control has been built into the manufacturing process. Line workers have increased responsibility for the performance of their group, which

provides the most immediate feedback on job quality.

Issue: Communication and decision making

Action: An information center at Pomona has been added in response to feedback from the Quality Assurance Environmental Test Department. It provides access to division and department policies and procedures, daily work assignment information and general division information.

Fort Worth's Quality Assurance Department has installed a "Can We Talk" memo that opens the door for direct communication between the Vice President and all employees of his department. Signed memos receive a direct response. Unsigned memos are answered in a monthly department newsletter.

Also in Fort Worth, the Data Systems Vice President/Center Director hosts monthly breakfast meetings for employees. Central Center CAD/CAM holds a similar lunch program. The Director of Central Center Product Software hosts a regularly scheduled meeting with new employees.

Land Systems Conducting Crew Automation Project to Aid Tankers

Human Factors engineers at Land Systems are conducting a three-year Independent Research and Development project known as Crew Station Automation to reduce workload and increase performance for tank crews.

The project is focusing on helmet-mounted displays, electronic tactical maps and automated vehicle health and status displays.

The helmet-mounted display provides a visual image from a sight or camera mounted on a vehicle. Once the tanker puts the helmet on, the direction of the sight is controlled with normal head motion. If the tanker turns his head to the left, the sight will also turn to the left.

The image coming from the sight is projected on an

eyepiece that is part of the helmet and is located in front of the tanker's eye. Thus, a tanker in combat can operate the sight faster with fewer errors and without the need to use his hands on a control device such as a joystick. The helmet-mounted display system will be fitted on the Human Factors Engineering-Vision Test Vehicle for extensive high performance driving tests at the Chelsea Proving Grounds.

The electronic tactical map displays a picture of a map for a given area of land. Markers and symbols will be automatically added to the map display to show the tanker where he is relative to such objects as enemy tanks or rivers. The tanker can select what best suits the task at

hand from an aerial view, a soldier's eye view or a combined view. This map system is being designed to reduce problems of disorientation and misinformation on the battlefield.

The automated vehicle health and status system will automatically monitor the condition of the tank's internal systems, sending information to the crewmen only when necessary. This will allow the crewmen to concentrate on the combat mission.

This system will help prevent mission failures that happen when the tanker does not notice a problem when it first occurs.

Our Commitment To Society

- *We will act as responsible and responsive corporate citizens and in a moral, ethical and beneficial manner.*

(From the General Dynamics Standards of Business Ethics and Conduct.)

Submarine Pasadena

(Continued from Page 1)

Laura Lee Carrico, Matron of Honor; and Kathleen Trost, Maid of Honor. Mrs. Carrico and Miss Trost are daughters of Admiral and Mrs. Trost.

Ralph A. Kennedy, who recently retired from Electric Boat as Chief Prefill Test 688 Class and 726 Class, was the triggerman for the launch. Kennedy pulled the lever that removed the last supports holding the ship in place on the ways.

The *Pasadena* will undergo tests and is scheduled to be commissioned into the fleet next year.

Launch Sponsors Protected from Flying Glass

Champagne bottles used in Electric Boat launching ceremonies are enclosed in pewter casings designed to let the bubbly flow, yet protect the sponsors from shattering glass.

The pewter casings, each about 14 inches tall and able to hold a single champagne split (half-bottle), are lined with fine screening and contain 98 star-shaped holes.

When the sponsor hits the pewter casing against the ship's striker bar, the combined impact and the pressure generated by the effervescent champagne causes the enclosed bottle to burst.

Spectacular bursts have been photographically recorded by Electric Boat — some that have showered the participants with a variety of domestic vintages.

"It's especially interesting in the winter when some of the champagne seems to crystallize in midair," said William Fitzgerald, a veteran launch assistant and chief administrator in the nuclear engineering office.

Many sponsors practice with a wooden facsimile of the bottle in the prelaunch briefing. The practice bottle looks like a small bowling pin and gives the sponsor a higher margin of confidence. If a nervous sponsor misses with the first attempt and the bottle is inadvertently dropped over the platform, an Electric Boat employee is quick to provide a backup. If a successful hit is made, an usher will recover the casing and hose off the residual champagne or shards of glass.

The dented pewter casing is then placed in a finely crafted box and given to the sponsor. Skilled craftsmen in Wallingford, Conn., are already preparing pewter casings for upcoming launches.



The Pewter Casing with Mahogany Box

What happens to the unneeded spare? It is locked away and eventually given to the captain of the ship when the submarine is commissioned into the fleet.

Space Systems Wins Air Force Contract For Propulsion Study

Space Systems Division has been awarded a seven-month contract from the U.S. Air Force to study the conceptual design of the Adaptable Space Propulsion System (ASPS). ASPS will be designed to provide an upper stage capability that is both shuttle- and Titan IV-compatible for launch of Department of Defense satellites.

The system will use storable propellants and will be designed as an autonomous upper stage that can be mated with various payloads or as an integrated propulsion system in the payload itself. The program will incorporate space shuttle upgrade load and performance studies that are currently being conducted by NASA.

Lockheed, McDonnell Douglas and TRW were also selected for study contracts. If a validation program is approved, two contractors will be selected in late 1988 to compete for full-scale development, which is scheduled to begin in late 1990.

Jerry V. Brown will be Program Manager and Edward J. Hujzak will be Chief Engineer.



Cooling for Quality. Donna Kadell, Research and Development Technician at Valley Systems Division in Rancho Cucamonga, Calif., inserts part of a Stinger missile's gyro optics mechanism into liquid nitrogen. The supercool liquid nitrogen breaks the epoxy resin bond between parts, allowing the hardware to be disassembled for inspection. The quality checks are made on randomly selected guidance components of Stinger, a shoulder-fired anti-aircraft weapon.

Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	July 1985	July 1986	July 1987
Salaried			
Government Bonds	15.0%	14.0%	5.8%
Diversified Portfolio	36.7%	29.4%	42.4%
Fixed Income	12.4%	12.1%	11.7%
Hourly			
Government Bonds	15.1%	13.4%	6.0%
Diversified Portfolio	36.2%	29.5%	44.8%
Fixed Income*	12.4%	12.1%	11.8%
GD Stock Closing Price	\$76.00	\$70.50	\$67.87

* Fixed Income effective 6/30/85

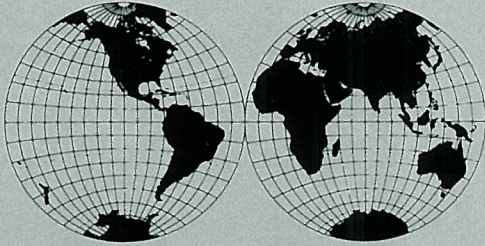
GENERAL DYNAMICS

World

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Manager of Internal Communication: Edward D. Williams

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Around the World

CHQ: William M. Hurd transferred from Land Systems and was promoted to Corporate Security Manager-Washington . . . Donald J. Lagaly transferred from Fort Worth and was promoted to Corporate Langley Representative . . . Michael C. Wasielewski was promoted to Corporate Director-Europe.

Fort Worth: A. Dwain Mayfield was appointed to Agile Falcon Program Director . . . Douglas L. Miller to Domestic Marketing Director . . . Richard W. Bassett, Roy H. Guinnup, Cyrus D. Tatum and Franklin E. Zoch were promoted to Financial Supervisor . . . Bradley J. Beard to Senior Program Analyst . . . Wesley E. Box, Jack R. Clement Jr. and James O. Steele III to Finance Manager . . . Homer E. Boyd Jr. and Danny Stuckler to Procurement Chief . . . David J. Brown, David E. Glidewell and Edward R. Venteicher to Finance Chief . . . Robert A. Carlson, David H. Gibson and Xavier J. Maumus to Engineering Chief . . . Don L. Case to Production Management Specialist . . . Michael P. Casey to Field Service Engineer . . . Arlin W. Ellis to Production Specialist . . . James E. Evans and John A. Fant to Engineering Program Manager . . . Jesse J. Felan to Tool Design Supervisor . . . Bennette B. Fruge to Facilities Engineering Chief . . . Ricky L. Head and Zenda C. Stevens to Material Planning Supervisor . . . Carolyn D. Joplin to General Foreman . . . Robert M. Lee and Edwin L. Robertson to Industrial Engineering Chief . . . Donna S. Livesay to Project Manager . . . J.R. Lummus Jr. to Engineering Project Manager . . . James L. Mixon to Engineering Administrative Group Supervisor . . . Phillip Michael Moore to Industrial Engineering Specialist . . . Hascoll D. Nolan to Project Engineer . . . Theodore Ovalle and Dan M. Steele to Senior Field Service Engineer . . . Hubert L. Patrick to Engineering Program Manager . . . Stephen B. Smith to Estimating Chief . . . Curtis W. Stone to Engineering Administrative Supervisor . . . Thomas E. Welker to Administrative Services Representative . . . Steve R. Wiggins to Facilities Planning Manager.

Electronics: Ray M. Trent was appointed to Operations Director . . . Donald V. Hill and Edward T. Roesch were promoted to Quality Manager . . . Sophia C. Wang and Gerard W. White to Associate Engineer . . . Mary W. Ogino to Administrative Financial Specialist . . . Michael L. Suttan to Marketing Specialist.

Convair: Christopher Lewnes was promoted to Senior Project Engineer . . . James P. Winninger to Finance Chief . . . Roscoe M. Anderson, Lyman E. Burr, Wayne T. Card and Diane J. Stockton to Group Engineer . . . John A. Bernetskie to Logistics Supervisor.

Space Systems: John A. Lambert Jr. was promoted to Manufacturing and Industrial Engineering Director . . . Robert L. Holcomb to Product Line Director . . . Thomas J. Danagelo Jr., Kenneth R. DeHaan, LeRoy R. Nottebaum and Bobby R. Quisenberry to Engineering Chief . . . Gracie L. DeHuff and Michael A. Short to Estimating Chief . . . Harvey R. Jewett Jr. to Senior Engineering Specialist.

Pomona: Conrad L. Wilcoxson was appointed to Long Range Missile Programs Director . . . Edmund T. Kamaka was promoted to Assistant Project Engineer . . . Gary R. Posthuma to Material Control Supervisor . . . Robert L. Day and Gerald M. Turner to Group Engineer . . . David C. Werner to Manufacturing Group Engineer . . . Donald R. Zugates to Engineering Manager . . . Diane Bracey to Design Specialist . . . Francis T. Decoteau to Systems and Procedures Manager . . . John A. Dowdell to Inspection General Supervisor . . . Marvin D. Sherfey to Senior Project Engineer.

Land Systems: Thomas A. Bledsoe was appointed to General Procurement Director . . . Fred W. Wahlgren to Major Systems Procurement Director . . . Helmut Roth to Program Director-K1/M48H . . . Thomas L. Ramsey was promoted to Manufacturing Programs Analyst . . . Royal K. Latshaw and Weston L. Stiegelmeier to Financial Analysis Chief . . . Earlene Wilson to Senior Administration Analyst . . . George J. McGuire to Material Control Supervisor . . . John R. Pepperman to Material Financial Specialist . . . Clyde E. West to Production Planning Specialist . . . John W. Crawford and John D. Carter to Contracts Manager . . . J. Richard Reichenbach to Compensation Manager . . . Arthur D. Emery to Labor Relations Manager . . . Douglas A. Gammage Jr. to Human Resources Administrator . . . Michael E. Fedorka to Human Resources Manager . . . Paul S. Danko to Quality Assurance Supervisor . . . Bruce V. Hough to Professional Staffing Manager . . . Randy M. Collins to Program Control Administrator . . . Robert L. Carter and Kenneth J. Nicholson to Engineering Supervisor.

Electric Boat: Richard C. Caldwell was promoted to Ship Superintendent . . . Alfred A. Restivo to Design Chief . . . Richard M. Cockley to Engineering Manager . . . Thomas E. Sheldon to Special Assistant to Div. Vice President-Operations . . . John G. McKechnie to Engineering Supervisor . . . George J. Cirillo to Design Services Supervisor . . . Maureen G. Stehle to General Foreman . . . Brian M. Browne, David L. Guizar, William H. Monk and Michael Tucker to Foreman . . . Jerry D. Kaufman to Senior Test Operating Engineer . . . Paul S. Athey to Test Operating Engineer . . . Christopher H. Foster to Admin./Control Coordinator . . . At Quonset Point, Leslie A. Morse Jr. was appointed to Manufacturing Director . . . Matthew L. Meierowitz was promoted to Planning Supervisor . . . Richard Losasso and Richard J. Vinal to General Foreman . . . Raymond Ostertag Jr. and James B. Reynolds to Foreman III . . . Joseph Ameika, Pamela Campbell, Gary Slater and David Wallace to Foreman II . . . At Idaho, Paul E. Billing was promoted to Foreman . . . At Kesselring, John R. Proctor to Assistant Superintendent . . . Robert J. Comrie to Senior Site Test Facility Supervisor . . . At Newport, Ronald C. Mauldin to Engineering Supervisor.

Valley Systems: Robert K. Carson was promoted to Section Head . . . Gail R. Mulhollam to Engineering Manager . . . Frederick W. Sherman to Senior Project Engineer.

GDSC: Daniel D. Chapman was promoted to Logistics Branch Leader . . . Robert E. Woodrich to Flightline Branch Leader . . . Francis E. Rebmann to Project Engineering Assistant . . . Carl T. Kennedy to Senior Field Engineer . . . Maureen M. Murphy to Associate Buyer.

Data Systems: At Western Center, Diane E. Blankenburg was promoted to Engineering Software Supervisor . . . Jerome D. Sabuda and Diana M. Watson to Engineering Software Chief . . . Keith M. Joyce and Thomas H. Conway to Project Engineer Supervisor . . . Gregory P. Gutting, Clifford A. Smith, David J. Wessels and Richard S. Ingardia to Business Systems Development Supervisor . . . Joye D. Greenwood to Technical Services Manager . . . Vicky L. Abbott to Business Systems Development Chief . . . Joan M. Saddler to Training & Development Chief . . . Gregory S. Brown to Data Ad & DD Program Office Manager . . . At Central Center, Gennaro G. Riccietelli to Engineering Software Supervisor . . . At Eastern Center, Mary C. House to Financial Control Chief . . . Mark J. Dieterle to CAD/CAM Chief.

Amateur Archaeologist Organizes Exhibition

A Land Systems employee recently organized an archaeological exhibition held at the Paint Creek Center for the Arts in Rochester, Mich.

Tracy M. Rozelle, Logistics Engineering Specialist, put together the exhibition that shows Indian artifacts, some dating back to 10,000 B.C. Called "Hunters and Gatherers," the exhibition displayed pottery used for storing water and cooking, Stone Age tomahawks, a replica of a Chippewa longhouse (early-American equivalent of an apartment complex), animal furs, ornaments made of slate or flint and worn around the neck and baskets.

An amateur archaeologist and past president of the Michigan Archaeological Society, Rozelle said he has been a "stones and bones" man for about 10 years. He has worked at various Indian burial sites in Michigan's Oakland County, excavating the tools, pottery and masks that local Indians once used.

Rozelle is also an archaeological guide and instructor at the Cranbrook Science Museum on weekends. He supervises children, ages 6 to 11, at a simulated dinosaur site in the Cranbrook Nature Center.



Now You See It, Now You Don't. Two F-16s illustrate how paint can be used to make an aircraft conspicuous or blend into the background. The predominantly white F-16 at left was given its bright paint job to make it more visible. A test aircraft, it is flown by USAF pilots assigned to the Air Force Logistics Command at Hill AFB, Utah. The F-16B at right, also a test aircraft, recently was repainted in green camouflage to represent a potential close-air support (CAS) F-16 version. The CAS F-16 mission would be support of ground troops in battle zones. The green F-16 is being used at Fort Worth for flight evaluation of possible F-16 CAS and night-attack enhancements.

Land Systems Submits Proposal for Modified M1A1 as Missile Chassis

Land Systems recently submitted proposals to the LTV Missiles and Electronics Group and to Hughes Aircraft Company for modifying M1A1 chassis and new design turret structures to mount their respective missile systems as part of the Army's Forward Area Air Defense System (FAADS) Line-of-Sight-Forward-Heavy (LOS-F-H) program.

FAADS LOS-F-H replaces the Sgt. York Air Defense System that was canceled by the Secretary of Defense in 1985. A Congressional mandate calls for one system to be selected by late November.

Four major contractor teams are competing in the

missile evaluation phase of the program started in July: LTV/Thomson CSF with the Shahine (Liberty) Missile; Hughes/Euromissile with the Roland Missile; Norden/FMC/British Aerospace with the Rapier Missile; and Martin Marietta/Oerlikon with the ADAT Missile.

Competing missile systems will be evaluated independently of their proposed chassis. In the objective or growth phase of the LOS-F-H program, competitors must meet improved survivability/mobility requirements to be provided by the Abrams or Bradley chassis. Norden/FMC/British Aerospace and Martin Marietta/Oerlikon will

probably propose the Bradley Fighting Vehicle chassis for this phase of the program.

The Army's procurement objective for FAADS LOS-F-H is listed as 562 units with low-rate production targeted to start in fiscal 1989. However, funding priorities in the Department of Defense may defer this program start.

This new system will provide a missile/gun mix that is capable of countering potential enemy threats in the 1990s. Missiles will be used against fixed-wing aircraft and helicopters while the automatic gun or guns will counter other air threats and provide defense against ground weapons.



Minority Small Business Award. Displaying award presented to General Dynamics for minority-owned business outreach efforts are Lewon D. Simpson (left), Fort Worth Vice President-Material, and Ted M. Allen, Fort Worth's Small/Disadvantaged Business Officer. Allen accepted the award on behalf of the corporation at a meeting in El Paso, Tex., sponsored by the Small Business Administration.

Company Honored with SBA's Sandoval Award For Efforts in Support of Minority Businesses

General Dynamics recently received the Small Business Administration's Region VI Federal Prime Contractor Award for outstanding performance in minority business outreach efforts.

The honor, called the Hilary J. Sandoval "Reaching for the Stars" Award, was accepted on behalf of the corporation by Ted M. Allen, Fort Worth's Small/Disadvantaged Business Officer, during ceremonies in El Paso, Tex. The award is named in honor of the first Hispanic administrator of the U.S. Small Business Administration.

Dorothy J. Davis, Deputy Small/Disadvantaged Business Officer at Fort Worth, and Paul Gradowski, Purchasing Agent/Small Business Officer at the Abilene Facility, also represented the company at the award

presentation that took place in conjunction with a Small Business Administration Region VI exposition in El Paso. Approximately 80 small businesses had displays at the exposition detailing their capabilities.

Several seminars on selling to the government and private sectors were also offered to minority vendors who attended the exposition. A panel of small business officers from General Dynamics and other contractor firms provided information on private sector selling.

The company's minority business outreach efforts, as recognized by the award, ensure that small disadvantaged business concerns have fair and equitable opportunities to compete for goods purchased by General Dynamics.

Discounts for Travel To Orient and Turkey To Continue in 1988

Percival Tours and World of Oz travel agencies will allow special General Dynamics discounts on tours of the Orient and Turkey to any employee, retiree or friend who books directly with one of the agencies in 1988. The discounts are \$50 per person for the Orient tour and \$25 to \$100 per person, depending on the tour, for Turkey.

The travel agencies currently work with the General Dynamics Offset Vacation Program, but that program ends Dec. 31st.

Employees should call Percival Tours at 1-800-527-8448 from the United States except Texas and 1-800-482-8282 from Texas for 1988 rates to tour the Orient. Rates for Turkey in 1988 can be obtained by calling World of Oz at 1-800-248-0234.

New English-Turkish Technical Dictionary Aids F-16 Production

Fort Worth's International Quality Assurance Department and personnel from TUSAS Aerospace Industries (TAI) in Murted, Turkey, have published an English/Turkish Language Technical Dictionary to improve communications on the Turkish F-16 coproduction program.

The dictionary grew from a need to translate rapidly English technical manufacturing and quality assurance terminology into Turkish. Standard English/Turkish dictionaries were unsuitable because they do not address the technical terms used in F-16 production, according to D.J. Talley, Fort Worth Vice President-Quality Assurance.

The new technical dictionary also contains program-related abbreviations and F-16-particular terms in both languages. Employees in International Quality Assurance and at TAI are finding it to be a valuable, time-saving tool, Talley said.

The TAI factory is scheduled to deliver the first Turkish-produced F-16 to the Turkish Air Force early next year.

Efforts are under way to produce the dictionary in other language versions to support coproduction activities in other nations, Talley said.

Corporatewide Program Aimed at Avoiding 'Missing' Documents By Joe Stout

General Dynamics' pilot program for Phase 1 of the Corporatewide Automated Security System (CASES) is operational at Fort Worth, where it is already proving its value as a central division control point for the accountability of classified material.

On-line accountability systems for managing classified information are scheduled to be installed at all company divisions by the end of the year during the initial phase of CASES. Records for Fort Worth's inventory of accountable classified items will have been entered into the division's system by the end of September, according to Dennis A. Chesshir, Director of Industrial Security at Fort Worth.

The CASES document control system is designed to ensure that all classified material at the division is inventoried and accounted for, so that there will be no "missing" documents and no unidentified documents in company safes.

Representatives of the Defense Investigative Service (DIS) looked closely at the new system while conducting a semiannual security inspection at Fort Worth in August, and it played a part in the excellent rating that Fort Worth received in the overall inspection, said David B. Layne, the Security Department employee who has functional responsibility for the system at the division. "The inspectors were so pleased with CASES that it was really one of the high points of their visit," Layne said.

Fort Worth's system consists of a Security Document Control Center staffed by the Security Department and 40 satellite centers operated by personnel from various departments at locations throughout the division. The satellite centers are equipped with terminals that provide access to the on-line system. The heart of the system is a mainframe computer that stores and processes identifying records for classified materials.

Under Fort Worth's previous manual system of classified accountability, document control transactions were conducted at about 340 separate sites. All transactions are now conducted at either the document control center or at one of the satellites. Typical transactions include preparing transmittal receipts, destruction certificates and dispatch and receipt records.

Documents are filed in the system's computer by num-



Accountable Shipment. Fort Worth Security Department employees, behind counter at the Security Document Control Center, watch as mail room personnel deliver incoming accountable material. Shown (left to right) are Denise Hale, Pam Smith, David Layne, Marlene Parkhill, Peggy Walton, Lynne Hughes, Steve Wheeler, Rosemary Lucas, Alex Garcia, Annie Perkins and James Gregory, Mail Services Supervisor. Identifying information for the material will be entered into the on-line document control system.

ber. The computer record also contains other accountability information that is required by security regulations, such as the document's creation date and classification downgrading date. To better manage the total inventory of classified material, Security Document Control can search the file by computer.

For example, a search might be run to determine which specific documents are scheduled to be downgraded by a certain date.

CASES will also enhance the ability of government security representatives to perform thorough inspections at the facility, said Peggy A. Walton of Security Document Control. "CASES gives the inspectors an easier starting point to learn the history of material, and it tells them who is currently responsible for it," Walton said.

Security Document Control supports all the satellite locations and also supports work areas not served by

satellites. In addition, the site serves as the control center for all classified documents that enter the division.

CASES is being implemented corporatewide through a coordinated effort of Data Systems Central Center, which is responsible for the programming and technical aspects of the system; Human Resources at Corporate Office; Data Systems Headquarters; and Steven Wheeler, Supervisor of Department of Defense Security at Fort Worth. Wheeler is serving as the CASES security focal point. CASES is part of a corporatewide security initiative led by William I. Ferrier, Corporate Director of Security.

While Phase 1 of CASES concerns the accountability of classified documents, Phases 2 and 3 will enhance the company's procedures in handling classified visits, managing personnel security clearances and performing other security-related tasks.

Record-Setting Voyager Pilots Visit Fort Worth Plant and 'Fly' the F-16

Jeana Yeager and Dick Rutan, who set a world record and accomplished what has been called "the last aviation first" in the *Voyager* experimental aircraft, visited Fort Worth recently to see the origin of another aviation marvel, the F-16 Fighting Falcon.

They were in town to speak at a function of the division's National Management Association chapter and toured the F-16 assembly line, inspected an F-16D on the company flight line and "flew" the airplane in Fort Worth's Flight Simulation Laboratory.

Their presentation at the Will Rogers Memorial Center in Fort Worth was attended by more than 2,000 people from the division and the community. It was co-sponsored by the association chapter, the City of Fort Worth, the local Chamber of Commerce and the Fort Worth *Star-*

Telegram newspaper.

As she climbed into the cockpit of an F-16 simulator at Fort Worth, Yeager told M.B. "Duke" Johnston, Pilot-Vehicle Interface Director at the division, that she had never flown a jet airplane. "You couldn't tell it from her handling of the simulator," Johnston said.

"She smoothly maneuvered the aircraft throughout takeoff, acrobatic flight and landing to the amazement of several technicians who observed the simulation. She stated that she hadn't had that much fun in a long time and seemed to delight in being exposed to another dimension of flight," Johnston said.

Rutan spent two decades in the U.S. Air Force and previously flew F-100 fighter aircraft. He was enthusiastic

about the handling qualities of the F-16, as accurately replicated by the simulator, and was impressed by a simulated visual scene of the Edwards AFB/Mojave Desert area, according to Johnston. The simulated landscape matches the takeoff and landing site of the *Voyager* at Edwards AFB, where most F-16 flight testing is conducted.

Rutan adapted to the F-16 simulator's handling characteristics and fly-by-wire flight controls rapidly, Johnston said.

The pilots were also accompanied by Edward M. Petrushka, Division Vice President-Research and Engineering, and Charles N. White, Division Vice President-Production, during their plant tour. Rutan showed considerable interest in the graphite-composite materials used in manufacturing the F-16's vertical and horizontal stabilizer skins.

In describing the paper-thin composite skins that cover the *Voyager*, Rutan noted that the lightweight, quarter-inch-thick Fighting Falcon skins "look like they would hold up a Mack truck."

The low-weight and high-strength properties of composites made it possible to build the Burt Rutan-designed *Voyager*, an aircraft capable of the unprecedented feat of flying all the way around the world (25,012 miles) without refueling.

The *Voyager* has a 110-foot wingspan, weighs 936 pounds without fuel or engines and carried 9,700 pounds of fuel when it began its record-breaking flight.

In introducing the pilots before their presentation, Petrushka noted that their world record is unlike most other modern aviation "firsts" in that the public can identify with the human endeavor as well as the technological accomplishment.

Yeager and Rutan showed slides and films as they described their arduous, nine-day flight in the *Voyager*'s cramped cockpit. Rutan said he provided more detail than usual in describing technical problems and physiological factors encountered on the flight because the Fort Worth audience included many pilots, engineers and others involved in aviation.

Yeager is a native of Fort Worth. Members of her family attended the *Voyager* presentation and were recognized by Petrushka. Also recognized was a group of local members of the International Woman Pilots Association.

After their speech, Yeager and Rutan were inducted as the first members of the Fort Worth Aviation Hall of Fame by Fort Worth City Manager Douglas A. Harman.



From Voyager to Fighting Falcon. Voyager pilots Jeana Yeager and Dick Rutan check out the tandem cockpit of an F-16D at Fort Worth. The record-setting pilots "flew" an F-16 in Fort Worth's simulation laboratory.

Electronic Bulletin Board is Utilized as a Cost-Competitive Tool By Joe Stout

As part of the company's overall effort to become a more cost-competitive government contractor, Fort Worth is using an electronic bulletin board to spread the word about quality and productivity improvement in the F-16 factory.

The display provides information on how employees can reduce nonconformance costs that result from failures to meet specifications in various aspects of production. Nonconformance ultimately raises the cost of the product, making the company less competitive, the display points out.

The portable display can be moved around in the factory and adjoining office areas to achieve maximum exposure among technical and administrative employees. A switch on the unit activates a taped audio message that reinforces information shown on backlit panels.

The display's construction allows it to be updated periodically to describe the most recent production non-conformances and their corresponding costs. "The display message increases quality awareness and continually reminds employees of the need to practice good product discipline techniques," said D.J. Talley, Fort Worth Vice President-Quality Assurance.

The display will also be used to keep employees informed about such company programs as the U.S. Savings Bonds drive, charitable contributions program and community relations efforts.

The electronic display was designed and built in a joint effort by Fort Worth's Production and Quality Assurance departments. It is one of several employee feedback projects that support quality/productivity improvement and cost-reduction initiatives at Fort Worth.



Electronic Bulletin Board. Viewing the latest information displayed on Fort Worth's electronic bulletin board are (left to right) Lt. Col. James W. Rice, Deputy Air Force Representative at Fort Worth; Charles A. Anderson, Vice President and Division General Manager; Charles N. White, Division Vice President-Production; Jan Blok, Director of Manufacturing Fabrication and Subassembly; and D.J. Talley, Division Vice President-Quality Assurance.

Maintenance Award Goes To Air Force F-16 Wing

The U.S. Air Force's 50th Tactical Fighter Wing, which flies and maintains Fort Worth-built F-16 aircraft at Hahn Air Base, West Germany, was awarded the 1987 Secretary of Defense Phoenix Award for having the best maintenance complex in the Department of Defense.

The award was recently presented to the unit by Robert B. Costello, U.S. Assistant Secretary of Defense for Production and Logistics. It is named for the ability of the legendary Phoenix bird to be continually reborn, which is said to characterize the role of equipment maintenance in the Department of Defense.

The unit also received the Air Force's Daedalian Trophy for maintenance this year.

The 50th TFW has squadrons with F-16A/B and F-16C/D Fighting Falcons, which have set new standards for readiness and maintainability in service with the U.S. Air Force.

Defense Systems Students Visit Land Systems Plants

Students from the Defense Systems Management College (DSMC) visited the Lima and Detroit tank plants for four days to study the technology and management demands required to produce the M1A1 tank.

In seminars with Land Systems Management from all departments, the 31 students discussed problems and solutions involved in developing and manufacturing the tank.

The 20-week DSMC Program Management Course develops the management skills of military and civilian members of the Department of Defense necessary for directing and controlling defense systems acquisition programs. Visits to industry complement the classroom work.

Company Schedules Bid To Operate DOE Plant

The company has announced it will pursue the solicitation by the U.S. Department of Energy (DOE) for the management and operation of the Mound Plant in Miamisburg, Ohio.

The Mound Plant, which provides research, development and production for the manufacture of a variety of components for nuclear weapons as well as support of NASA missions, was operated for the last 40 years by Monsanto Research Corporation for the DOE. Monsanto has announced it will not renew its Mound contract with the department when the contract expires in September 1988.

Zero Discrepancy Effort with Systems Trainer Results in Design and Workmanship Award

Fort Worth recently delivered the division's sixth and seventh zero-discrepancy maintenance training systems within about two weeks of each other.

When the sixth zero-discrepancy unit, an F-16 seat and canopy systems trainer, was delivered to the Turkish Air Force, several of Fort Worth's engineering and manufacturing departments were honored with a Good Design/Fine Workmanship (GD/FW) Award for their combined efforts in producing it.

The same departments and individuals then distinguished themselves a second time by completing a zero-discrepancy F-16 fuel system maintenance trainer for delivery to Turkey.

The GD/FW Award, presented to the groups by Charles A. Anderson, Vice President and Fort Worth General Manager, and D.J. Talley, Division Vice President-Quality Assurance, recognizes the departments' dedication to quality.

The training systems passed customer inspection by representatives of Fort Worth's Air Force Plant Representative Office (AFPRO) with no discrepancy write-ups, according to L.B. "Rick" Rickmers, Chief of Trainer Design at Fort Worth.

Fort Worth had previously delivered two F-16 liquid oxygen system trainers, two fuel system trainers and another seat and canopy systems trainer with no discrepancies, said C. Keith Brockman, Manager of F-16 Training Equipment. A total of 75 maintenance trainers for nine different aircraft systems have been delivered to the air

forces of eight nations since the beginning of the F-16 program.

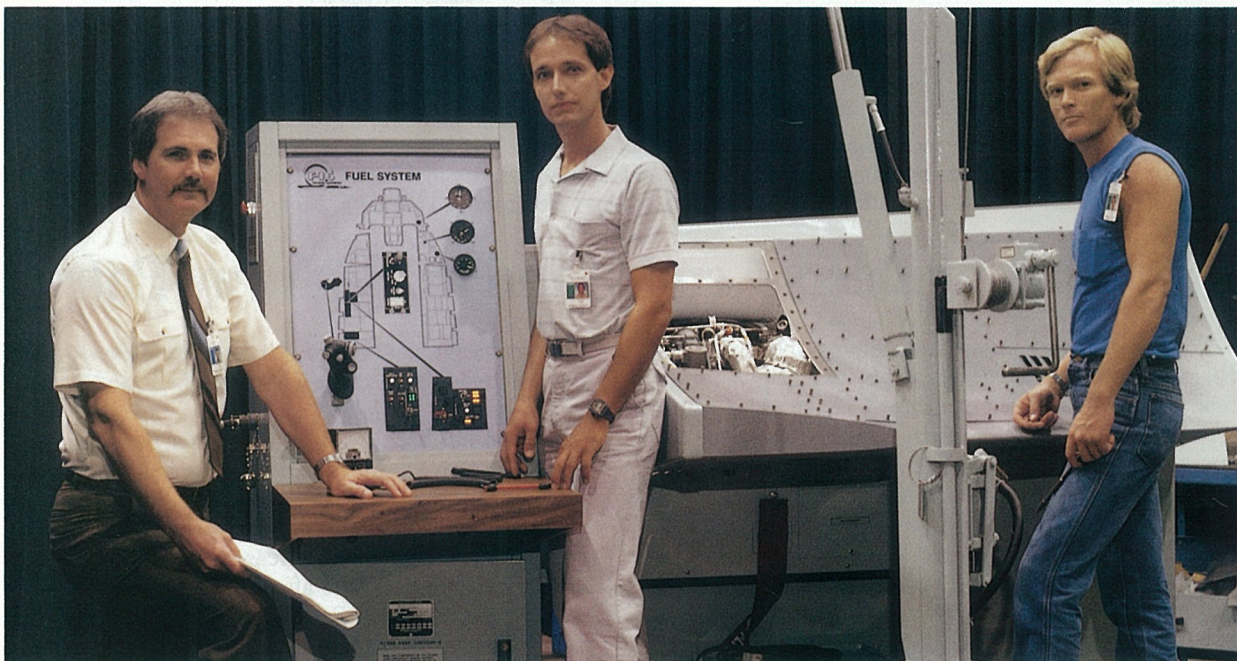
The division has contracts for 11 additional trainers. The next delivery is scheduled in 1989.

Each trainer includes actual aircraft equipment that operates in conjunction with simulated cockpit instruments and controls. When one student is performing maintenance on the equipment, another can monitor and operate the related controls in the cockpit. If the technician has to remove other hardware to gain access to parts of a system that he is working on, that hardware is included in the maintenance trainer also.

Most structural parts for the trainers come right off the F-16 production line, Rickmers said. For example, the seat and canopy systems trainer includes the F-16 forward fuselage structural component, an ejection seat, all safety equipment, actuators, the forward and aft canopy transparencies and other hardware that is involved in maintaining the seat and canopy systems.

"With these trainers, maintenance students get hands-on experience with actual equipment without having to take an airplane out of operation," Rickmers said.

The Fort Worth departments honored for the zero-discrepancy efforts included Manufacturing Support Equipment (MSE), the MSE Planning and Materials departments, Support Equipment Coordination and Control, Trainer Design, Training Systems and the Integrated Logistics Support Program Office.



Zero-Discrepancy Trainer. With Fort Worth's seventh zero-discrepancy trainer, an F-16 fuel system model, are Larry F. Henkle (left), Engineering Specialist in the Trainer Design group, and Production Department employees Fred R. Sladovnik (center) and David H. Alderson.

Hearing-Impaired Students Are Motivated by 'Role Modeling' Program

The newest facet of Fort Worth's continuing effort to assist local schools is a "role modeling" program that is designed to inspire and motivate students who are hearing-impaired.

In the program's initial thrust, Paul F. Jakins, a senior engineer who has a hearing impairment, visited an elementary school, middle school and high school in the Fort Worth Independent School District (ISD) late last spring and communicated in sign language with groups attending classes administered by the Fort Worth Regional School for the Deaf.

Jakins' presentations stressed the value of higher education in increasing opportunities for persons who are hearing-impaired and



highlighted some of the special challenges that deaf people face in the workplace and in the community. As a person who has met those challenges successfully, Jakins is an excellent example for the students, said Steve G. DeLeon, of the division's Engineering Personnel section, who coordinates many of Fort Worth's Adopt-A-School efforts.

Adopt-A-School is a cooperative program of the Fort Worth ISD and industries in the area. When Adopt-A-School administrators asked the division to provide hearing-impaired role models, Jakins and another deaf employee, G. Mack Harris, were selected. Harris, who works in Engineering Graphics, was unable to participate last spring because of business travel.

Jakins said many of the students had questions about such subjects as using the telephone and finding interpreters in the workplace. Jakins is one of approximately 30 hearing-impaired employees at Fort Worth, working in a variety of departments. He communicates with his coworkers by reading lips.

DeLeon, who was present at all the sessions, said it was

apparent that the students were encouraged and excited about Jakins' message. "The district is very interested in continuing this because the administrators feel that Paul's visit was very beneficial for the students," DeLeon said. "We plan to expand the program to other school districts and will involve other hearing-impaired employees."

One of the schools where Jakins gave the presentations was Trimble Technical High School, where his wife, Tanya, who also is hearing-impaired, teaches classes for the deaf.

Jakins holds a Bachelor of Science degree in Mechanical Engineering from the Rochester Institute of Technology in Rochester, N.Y., and attended the Franklin Institute in Boston. He has been employed at Fort Worth since 1976 and presently works in the Engineering Department's Installation and Packaging group, where he designs installation provisions for F-16 electronic systems.

Among his other accomplishments, Jakins played on the gold medal-winning volleyball team at the 1975 Pan American Games in Maracaibo, Venezuela.

Valley Systems Gets Contract for Stinger System

Valley Systems Division has received its first production contract for the Air-to-Air Stinger (ATAS) system, capping an effort that began in 1968 when the air-to-air approach for Stingers was first demonstrated using Redeye missiles.

The \$18-million contract from the U.S. Army Missile Command (MICOM) is for low-rate initial production of ATAS launching systems and Stinger-RMP (Reprogrammable Microprocessor) captive flight trainers. First deliveries under this contract are scheduled to be made to the U.S. Army Aviation Systems Command (AVSCOM) in early 1989.

The production contract follows the recently completed Full-Scale Engineering Development (FSED) contract awarded by AVSCOM in late 1984. During day and night tests conducted as part of FSED, ATAS scored a perfect eight direct hits in eight firings. The tests took place in July and August last year.

Robert D. Connell, Division ATAS Program Director, said that production of ATAS will "satisfy the critical need" for an air-to-air self-protect weapon system for

helicopters. He congratulated all division personnel who contributed to the development of the system and kept the program on schedule. "All Valley Systems employees should be proud of their role in bringing this vital system to the military inventory," he said.

The first systems are planned for installation on the Army's OH-58 scout helicopters, and future planning provides for ATAS placement on attack helicopters and certain utility and transport helicopters. Because of this need, the division expects to receive additional ATAS contracts in the next five years that would call for production into the mid-1990s.

ATAS — at 123 pounds the lightest heliborne air-to-air missile system available — uses the unmodified Stinger missile. By utilizing Valley Systems' new Stinger-RMP missile, future ATAS systems will have the capability of being upgraded with the latest software to defeat advanced and changing threats, Connell said. "This cost-effective Stinger reprogramming allows rapid response to threat changes, prevents obsolescence and extends system longevity," he said.

T. Augustsson Begins Study as Company's Sloan Fellow at MIT

Thomas R. Augustsson, an engineering specialist at Fort Worth, recently began a one-year study program at the Massachusetts Institute of Technology as the company's Alfred P. Sloan Fellow for 1987-88.



Augustsson will be awarded a master's degree in management upon completion of the program, which is described as a broadening experience for midcareer executives. A corporate staff committee chaired by General Dynamics President

Augustsson

Oliver C. Boileau, who was a Sloan Fellow in 1964, selected him for the program from a field of other nominees.

Boileau is scheduled to address this year's class of Sloan Fellows at MIT in October.

Augustsson supported the Advanced Programs function in his most recent assignment at Fort Worth. He joined the company in 1984 as a senior engineer in the Thermodynamics Analysis group and later worked in the Electro-Optical and Acoustic Signature group.

He said his tenure as a Sloan Fellow will be "an excellent opportunity to devote one year to intense full-time study of management theory and related academic topics. This is also a good time to reappraise my personal outlook and goals."

"In addition, the MIT program will afford me the chance to interact with classmates from various backgrounds and experiences," he said. "When I look back on this year, I am sure I'll find that the students, as a class, learned as much from each other as from the instructors." He also said the program is very fast-paced.

Augustsson's wife, Darleen, and their two children, ages 8 and 10, are with him in the Boston area for the duration of the program. His wife is on leave from her position as director of an Early Childhood Center in Willow Park, Tex.

Augustsson completed his graduate degrees while in residence at NASA Langley Research Center, Hampton, Va., between 1975 and 1981. In addition to doctorate and master's degrees, he holds a bachelor's degree in aerospace engineering from the University of Florida. From 1981 to 1984, he served a National Research Council Fellowship awarded by the National Academy of Science and the National Academy of Engineering. He has authored and coauthored more than 40 technical publications and presentations.

Augustsson has also been active in civic government, having served as mayor of Annette, Tex., and on the town's city council and planning commission.

1st Turkish-Built F-16

The TUSAS Aerospace Industries (TAI) factory in Murat, Turkey, reached another milestone recently when the plant's first F-16 was rolled from the assembly hall to the fuel system and calibration building.

Employees of TAI and General Dynamics, including the General Dynamics Resident Office in Turkey, were invited to witness the event.



Safety Simulator. Convair engineers examine a California Highway Patrol "seat belt convincer" with an eye toward designing and building a better machine to help the CHP promote seatbelt safety in San Diego. Left to right: Frank J. Szafranski, Richard W. Dawson, Mark D. Long, CHP officer Lloyd Needham and Walter E. Mooney.

Convair Engineers Lend Hand to Highway Patrol

Four Convair engineers are helping the California Highway Patrol (CHP) design and build a demonstration vehicle called a "seat belt convincer." The machine will be used at schools and community events to show the difference a seat belt can make for a passenger in withstanding the forces of an automobile crash.

Richard W. Dawson and three colleagues, Frank J. Szafranski, Mark D. Long and Walter E. Mooney, work on Convair's Hypersonic Technology Program during the day. In their free time, they are applying their engineering expertise to improve the design of a "seat belt convincer" already operated by the CHP in the Los Angeles area. Because no engineering drawings exist, the Convair engineers took detailed photographs of the original vehicle

during a recent plant visit by CHP officers. Dawson said they will build the machine with inexpensive and donated parts.

Dawson has been involved with other seat belt safety projects in San Diego. "Recent surveys have shown that less than 50 percent of the children riding in cars are restrained as required by California law and common sense," said Dawson. "One reason may be that some families may not be able to afford a safety seat."

Dawson founded the Save-A-Tot Car Safety Seat Program, which operates through the Kiwanis and San Diego Coalition for Children's Car Safety. They provide donated safety seats through hospitals, local police and the court system to families who need them.

First Cessna Citation S/II in England Enters Service with Vickers

Cessna's Citation S/II business jet has been certified for operation in England, and the first aircraft has entered service with Vickers P.L.C.

Government approval of the Citation S/II was received recently from the CAA, Great Britain's aviation authority.

Vickers P.L.C., which produces Rolls-Royce and Bentley automobiles, lithographic printing plates, medical and scientific equipment, business furniture and armored fighting vehicles, replaced a Citation I with its new aircraft. The company initially operated a Cessna 421 Golden Eagle.

Vickers officials said the company operates its aircraft throughout Britain and Europe, taking sales and engineering staff to their customers and bringing customers to Vickers facilities.

The company's flight crews are reporting better fuel efficiency with the larger, higher-performing Citation S/II than with the Citation I it replaced.

The Citation S/II is based at Cranfield Airport in Bedfordshire where it is maintained and operated by Vickers Communication Flight.

Cessna officials said interest in Citations is at an all-time high in England. The Vickers aircraft is the first of seven Citations ordered in Great Britain this year, including three Citation S/II and four Citation IIs.

There are 26 Citations operating in England, including 10 Citation Is, 15 Citation IIs and one Citation S/II. There are 175 Citations operating throughout Europe.

The Citation S/II was introduced in 1984 as a significantly advanced version of the Citation II, the world's

best-selling business jet. More than 125 of the eight-passenger Citation S/II fanjets have been delivered.

The Citation II, more than 500 of which are in service,

was reintroduced to the Cessna product line this year. Cessna is the world's leading producer of business jet aircraft.



First Cessna Citation S/II Operated by Vickers, Maker of Rolls-Royce Automobiles

Favorable Responses To Ethics Program Received by Company

(Continued from Page 1)

accomplishments, we must guard against forgetfulness and lethargy. Ethical conduct depends on alertness and information. It depends heavily on commitment. 'You gotta wanna,' as the phrase goes. This attitude is there, but it does require reminders and reaffirmation. The management of General Dynamics supports our efforts in maintaining close continuity with the past achievements of the program while, simultaneously, adjusting it to the evolving, dynamic environment in which it operates."

Legal and business administration scholars are paying attention to two of the program's keystones, the Standards of Business Ethics and Conduct and the film "Your Values-Our Values." The Standards were reprinted in "Corporate Counsel's Quarterly," and introduced by an editorial note which pointed out: "As you can see, General Dynamics has opted for the all-inclusive legal and ethical conduct statement."

A videotape version of "Your Values-Our Values" is available to faculty members using "Business," a textbook published this fall by Houghton Mifflin Company. Co-authored by Barry L. Reece, Professor of Marketing Education at Virginia Polytechnic Institute and State University and James P. O'Grady, Professor of Business Administration at St. Louis Community College at Florissant Valley, the textbook is aimed for the introductory business course at the undergraduate level. "In Chapter Two, which covers Social Responsibility and Business Ethics, we refer to 'Your Values-Our Values' as one of seven videos made available to classes using our book," said O'Grady. "The text has been adopted at about 125 to 150 institutions."

Pomona Awarded Contract To Build Eight Test Sets For Standard Missiles

Pomona has been awarded a \$41 million contract to build eight Mark 612 test sets for the U.S. Navy's Standard Missile.

The test sets are designed to subject Standard Missiles to simulated flight environments to ensure that the fully assembled round is functioning properly before being loaded into navy warships. Deliveries will begin in 1989 and continue for two years.

Standard Missile is a supersonic surface-to-air guided missile that is the primary fleet defense against a variety of threats. Pomona has delivered more than 15,000 Standard Missiles to the U.S. and allied navies since 1965.

Land Systems Volunteers Assist U.S. Army In Golden Field Day for Handicapped Children

Land Systems and its employees recently helped the U.S. Army conduct its Fort Knox Golden Field Day, a sporting event for handicapped children.

Land Systems sponsored 30 athletes from the Cerebral Palsy School of Louisville, Ky., making the division the largest sponsor of children for this event.

It was the third year of Land Systems' participation. The total number of sponsored athletes has increased from 300 in 1985 to 900 this year. Attendance has also increased from 2,000 in 1985 to 25,000 this year.

Mary Johnson, Corporate Representative, Fort Knox Field Office, spearheaded this community effort for Land Systems as she has for the past three years. She served on various committees and coordinated the Land Systems effort throughout the year with the Fort Knox Golden Field Day executives and the Cerebral Palsy School of Louisville.

Land Systems volunteers for the event were flown from Detroit to Fort Knox.

Golden Field Day started well before 7 a.m. when the

first of the buses from the Cerebral Palsy School arrived. Most of the athletes sponsored by Land Systems are wheelchair-bound, although some are mobile without their wheelchairs on a restricted basis. Each volunteer took charge of a specific child or group and participated in such scheduled events as wheelchair races, softball distance tosses and floor exercises.

An official parade featuring the Fort Knox Saddle Club, local fire departments, the Fort Knox High School Marching Band and Drill Team, clowns and floats from surrounding cities and communities started the day. Other attractions were pony rides, face painting, air shows, model train displays and puppet shows. Members of the Cincinnati Bengals and the University of Louisville football teams also appeared.

Maj. Gen. Thomas H. Tait, Armor Center Commander, spent several hours at the Land Systems tent. He met the athletes and their parents and the volunteers. General Tait also presented many of the medals to the athletes.



Fort Worth Products on USAFE Patrol. An F-16C from Hahn Air Base, West Germany (upper left), flies a training mission over Europe with two other U.S. Air Force in Europe (USAFE) aircraft that were originally built at Fort Worth: an EF-111 Raven electronic warfare aircraft (upper right) from RAF Upper Heyford, England, and an F-111E fighter-bomber from RAF Upper Heyford. The EF-111 was modified to its current configuration by Grumman.



THEY ALL PINNED THEIR HOPES ON PEACE.

They were all fighters.

The conservatives fought with the liberals. The Democrats fought with the Republicans. The Bull Moosers fought with everybody.

They fought for different policies. But for the same principles. For freedom. And the freedom to live in peace.

Americans are still fighting for those principles today. And working for them too.

That's why every day more than 100,000 Americans work at General Dynamics to supply America's fighting men and women with the best weapon systems in the world.

They are working for peace. And for peace of mind.

GENERAL DYNAMICS
A Strong Company For A Strong Country

Atlas/Centaur Is Selected to Launch a EUTELSAT II Satellite in 1990

The General Dynamics Atlas/Centaur has been selected by the Board of Signatories of the European Telecommunications Satellite Organization (EUTELSAT) to launch a EUTELSAT II communications satellite in 1990. The order also includes options for up to two additional launches.

In making the announcement Sept. 25th, Andrea Caruso, Director General of EUTELSAT, said, "The Atlas/Centaur was chosen as a second source of launch services in addition to Ariane because it met all of our major launch requirements to place in orbit satellites of our second-generation EUTELSAT II." Key to the decision, he said, was cost, schedule flexibility and reliability of the launch vehicle.

Dr. Alan M. Lovelace, General Manager of the Space Systems Division, said, "We are extremely proud of the fact that our Atlas/Centaur was selected for these important missions that will enhance international telecommunications between member countries of the EUTEL-

SAT organization. The order from EUTELSAT is a significant action that reinforces our commitment to be a leader in the commercial launch services marketplace."

A contract signing ceremony between General Dynamics and EUTELSAT took place this month in Geneva, Switzerland, during the Telecom '87 Conference.

The EUTELSAT order is the first firm contract for General Dynamics since announcing its intention in June to build 18 Atlas/Centaurs for the commercial launch services market. In addition, the company has received several reservations for launch services from other customers. Under the program, Space Systems Division is offering a comprehensive launch services package to commercial and government customers worldwide.

The European communications satellite will be launched from Cape Canaveral, Fla. All facilities, services and arrangements required for spacecraft processing and launch are provided by General Dynamics under a single launch services contract. The EUTELSAT II launch is

scheduled for early 1990. To accommodate the spacecraft, the Atlas/Centaur will be configured with a new four-meter payload fairing.

The EUTELSAT II satellites, of which four flight units were ordered from European industry, will be equipped with 16 transponders that can be used simultaneously. Each will have 24 transmit amplifiers divided into two groups to ensure a high degree of overall transponder reliability. Switching in the feed networks for each of two antennas will allow a choice to be made in orbit between a transmit beam providing European-wide coverage for telephony, telex and data transmission, or a more concentrated transmit beam for the distribution of high quality television through medium and small earth stations to a large part of Western Europe.

EUTELSAT is an intergovernmental organization composed of 26 European countries that provides space segment capacity through its regional satellite system to telecommunications entities.

GENERAL DYNAMICS World

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Company Ad on Page 10

An advertisement featuring a special Cessna airlift is displayed on Page 10. It is one of a series of advertisements the company is currently running in major newspapers and national magazines.

Company's Ethics Booklet Is Updated With Second Edition

Two years after the inauguration of the General Dynamics Ethics Program, the ethics booklet has been updated. Corporatewide distribution of the Ethics Standards Second Edition will begin this month, ultimately reaching all 106,000 employees of the company.

"This new edition has been updated and improved based on what we heard from employees through the Ethics Awareness workshops, the employee survey and communication with the Ethics Program Directors," said Stanley C. Pace, Chairman and Chief Executive Officer. "Now that we have updated the standards, it is important that we redistribute those standards so that each employee will continue to have the clear and simple guidelines necessary to conduct daily business."

Advance distribution of the booklet began this month to top corporate leaders attending the third quarter performance review. The schedule calls for all salaried personnel to receive the booklet by the end of December and hourly personnel by the end of March. This five-month period will provide time for employee/supervisor meetings to distribute the booklet and discuss the changes to the standards. Employees hired after Nov. 1st will receive the new booklet when employment begins.

The second edition of the Ethics Standards will look similar to the old edition. It will use the same format. Its blue cover will have slight design changes. Inside, previous standards remain unchanged except for some clarifications and modifications. Two new standards are included: Safety and Health and Proper Use of the Ethics Program. The five key commitments remain the same. They involve the relationship between General Dynamics and its customers, suppliers, employees, shareholders and home communities.

"It's important to remember that the Ethics Standards booklet is not just a collection of good words," said Kent Druyvesteyn, Corporate Ethics Program Director. "The guidelines set down by the standards are company policy."

Just as employees acknowledged receipt of the booklet during the implementation of the program in 1985, they will be asked to acknowledge receipt of the second edition booklet by signing a card that reads: "I have received and

(Continued on Page 2)



Cessna Aircraft Company's New Citation V Business Jet

Cessna Introduces Citation V Business Jet

Cessna Aircraft introduced the Citation V, the latest addition to its business jet product line, on Sept. 28th at the National Business Aircraft Association (NBAA) convention in New Orleans.

The larger, faster and higher-flying follow-on to the Citation S/II first flew in mid-August and interrupted its flight test program to make a one-day appearance at the NBAA convention.

FAA certification of the Citation V is scheduled for November 1988 and the first aircraft will be delivered in February 1989.

Brian Barents, Cessna's Senior Vice President of Marketing, said, "The Citation V is in a class by itself with its superb combination of speed, cabin comfort, climb performance, range and ability to operate out of relatively small airports."

"Add a very competitive standard equipped price of \$3.795 million to the traditionally low Citation operating costs," Barents said, "and the Citation V simply has no

equal in its class."

Barents emphasized that the Citation V's price with standard equipment includes almost \$400,000 worth of equipment that usually is considered optional on other aircraft.

In addition to the standard complement of Category II avionics, Barents said the Citation V's list with standard equipment includes thrust reversers; an integrated Sperry autopilot and flight guidance system, including an Electronic Flight Instrument System (EFIS) in the pilot's panel; a Global GNS-X Navigation Management System; advanced weather radar; an eight-passenger interior; engine synchronizers; a 64 cu. ft. oxygen system; radio and encoding altimeters; recognition lights; a second transponder; and an inflight telephone.

Powered by Pratt & Whitney JT15D-5 engines, the Citation V features a fuselage that is almost two feet longer

(Continued on Page 2)

Company Is Selected for Preliminary Design Of DOD/NASA's National Aero-Space Plane

The Department of Defense and the National Aeronautics and Space Administration (NASA) announced earlier this month that General Dynamics has been selected to participate in the next phase of the National Aero-Space Plane (NASP) development program.

General Dynamics, McDonnell Douglas and Rockwell International have been awarded \$25.5 million contracts for preliminary design of a NASP prototype vehicle designated the X-30.

At the conclusion of the new program phase in 1990, one contractor may be selected to build and flight test the experimental vehicle.

Fort Worth is the company's lead division in the NASP effort, which also involves Convair and Space Systems. General Dynamics was one of five competing aerospace firms that received \$7.7 million contracts for NASP concept development in April 1986. Two contractors were

eliminated with the recent announcement.

The NASP is envisioned as a hypersonic aircraft that would take off from a conventional runway and fly directly to earth orbit. The term "hypersonic" refers to a planned capability to achieve sustained cruise speeds greater than Mach 5 in the atmosphere.

Charles A. Anderson, Vice President and Fort Worth General Manager, said the company is placing a high priority on its work in the program. "We believe that our company's experience in airframe technology and associated disciplines will be key factors in the pursuit and success of this most important national effort," he said.

In announcing the contractor selection, the Department of Defense said work to date indicates that the X-30 can be built at a size and weight "consistent with the principle"

(Continued on Page 2)

Ethics Standards Booklet Is Updated; Distribution Starts This Month

(Continued from Page 1)

read the second edition of the General Dynamics Standards of Business Ethics and Conduct. I understand these Standards represent the policies of General Dynamics." The card for the second edition will replace the old card in the employee's permanent record.

Planning for the second edition distribution is well under way. Ethics Program Directors and other key groups at each operating unit will facilitate distribution and help supervisors plan meetings with their employees. The directors met recently in San Diego to share ideas and resources and to make sure the unique needs of all the divisions and subsidiaries are met.

The corporatewide distribution involves sizable logistical planning, considering that many operating units have multiple sites and employees at remote locations. In addition, the standards are being distributed to constituent groups of General Dynamics including consultants, suppliers, customers and community and government leaders.

"As this significant new phase of the ethics program begins," Druyvesteyn said, "it is gratifying to look back on the two years of operation and know that our program has received favorable attention from our customers and the business community. The program has been of genuine service to General Dynamics employees, who will continue to be the key to its success."



Kent Druyvesteyn Conducts Meeting of Ethics Program Directors in San Diego

Executives Appointed To New Committee On Contributions

Five executives at the Corporate Office have been appointed by Chairman Stanley C. Pace to a newly formed Corporate Contributions Committee.

Named as chairman of the committee was Robert A. Morris, Corporate Vice President-Communications. Other members are Standley H. Hoch, Executive Vice President-Finance; James R. Mellor, Executive Vice President-Marine, Land Systems and International; Arch H. Rambeau, Corporate Vice President-Human Resources; and Frederick S. Wood, Executive Vice President-Contracts, Pricing and International Offset. Winston C. Gifford, Corporate Director-Contributions, was named Executive Secretary of the committee.

In announcing the appointments Sept. 28th, Pace said, "I consider our contributions program one of the keystones of our long-term efforts to rebuild the public reputation of the company."

Pace said he looked forward to working with the committee and planned to stay closely involved.

South Korea's K-1 Main Battle Tank Makes Its Debut

South Korea's K-1 Main Battle Tank made its debut in a demonstration Sept. 18th at a South Korean military base. The tank is made by South Korea's Hyundai Precision and Ind. Co., Ltd., in collaboration with Land Systems.

The K-1, which was renamed the "88-Tank" by South Korean President Chun Doo Hwan at the demonstration, resembles the M1 Abrams made by Land Systems for U.S. ground forces. However, the 88-Tank is somewhat smaller and lighter. It mounts a 105mm gun and a 7.62mm coaxial machine gun and carries .50-caliber and 7.62mm machine guns atop its turret. The tank's sophisticated equipment includes an all-weather thermal imaging sight system, a laser range finder and a digital ballistic computer.

About 700 people, including South Korean opposition leader Kim Young-sam and Defense Minister Chung Ho-yong, attended the demonstration. Representing General Dynamics were President Oliver C. Boileau; Robert W. Truxell, Vice President and Land Systems General Manager; Michael W. Wynne, Land Systems Vice President-Marketing; Phillip W. Lett, Land Systems Vice President-Engineering and Consultant; Helmut Roth, Land Systems Korean Tank Program Manager; and Carmen P. Milia, Land Systems Director-International Operations.

A formation of 88-Tanks combined with artillery, armored personnel carriers and helicopters during the demonstration. The tanks showed their fire-on-the-move ability by hitting moving simulated enemy tanks, prior to attacking and destroying mock enemy bases.

Company Forms Defense Initiatives Office

General Dynamics on Oct. 6th announced the formation of a Defense Initiatives Office (DIO) to be based in Washington, D.C., and to be headed by Charles D. Vollmer as Staff Vice President-Defense Initiatives Office. The group will pursue ongoing and future programs in government Strategic Defense, Air Defense and Conventional Defense initiatives.

Stanley C. Pace, Chairman and Chief Executive Officer, said that the move is one of a number of planned corporate new business actions, following the recent completion of an extended study by a company Government Business Task Force to assess new business opportunities in a wide range of projected government programs.

The new Washington-based office will be responsible

for overseeing the company's Government Aerospace group activities in the SDI/ADI/CDI programs, as well as for transitioning programs to the appropriate division prior to award.

Vollmer has been serving at the Corporate Office as Corporate Director-Plans and Operations Analysis. He has been corporate team leader for the company's SDI/ADI participation and was involved in numerous new business activities. A former U.S. Air Force pilot who flew 175 combat missions in Southeast Asia, he is a 1969 graduate of the U.S. Air Force Academy, holds a master's degree from Northern Arizona University and is a recent graduate of the Massachusetts Institute of Technology Sloan School for Senior Executives.

Company Is Selected for Preliminary Design

(Continued from Page 1)

of the NASP concept.

Material and propulsion technology advances will be key ingredients to the success of the program. Press reports on the announcement predicted that many commercial and military technologies will "spin off" from NASP development.

The NASP program has been called "the largest research aircraft project ever undertaken in the United States."

President Reagan declared the NASP program a national priority in his 1986 State of the Union address. He called the aircraft the "Orient Express," noting that it

would be able to fly from New York to Japan in two hours.

Two engine companies, Rockwell International's Rocketdyne Division and Pratt & Whitney, have development contracts for NASP propulsion systems.

The Defense Advanced Research Projects Agency (DARPA) is managing the NASP key technology development phase for the Department of Defense and NASA. NASA, Navy and Air Force laboratories are supporting the program. A joint program office is located at Wright-Patterson AFB, Ohio.

Cessna Introduces Citation V Business Jet

(Continued from Page 1)

than the Citation S/II. The additional length improves the eight-passenger, double-club seating arrangement by providing greater legroom and more space for reclining seats and cabinets.

The Citation V cruises at nearly 500 mph and will be certified to an altitude of 45,000 feet. At its maximum operating weight of 15,900 pounds, the new Citation can climb to 41,000 feet in just 24 minutes.

"Two other important features that set the Citation V apart from its competition," Barents said, "are its fully private toilet/vanity area at the rear of the cabin and its external baggage compartments. No other aircraft in its price range has a toilet/vanity area in the rear of the cabin, where it should be located for privacy and convenience."

Barents said the two external baggage compartments can accommodate 850 pounds of baggage in 41 cubic feet of storage space. Much of the baggage in competitive aircraft must be stored in the cabin and loaded through the passenger area.

The Citation V's passenger cabin length of almost 18 feet is nearly two feet longer than the Citation S/II, more than three feet longer than the Beechjet and almost five feet longer than the Learjet 35A. The Citation V's longer cabin also adds a seventh window on each side of the

fuselage.

In a Cessna survey of Citation S/II owners, short takeoff distance was second only to low cost of operation when the operators were asked to list the strengths of their aircraft.

Despite the Citation V's increased size and gross weight, it surpasses the takeoff performance of the Citation S/II. The balanced field length (takeoff distance) of the Citation V is 3,160 feet, compared to 3,240 feet for the Citation S/II, 3,950 feet for the Beechjet and 5,050 feet for the Learjet 35A.

The Citation V features a new anti-ice/deice system, consisting of inboard wing cuff leading edges heated by engine bleed-air, and new, silver low-profile deice boots on the outer wing and horizontal stabilizer leading edges.

The first engineering prototype of the Citation V has logged more than 50 flight hours and recently climbed to 45,000 feet in just 18 minutes. This aircraft will be used in the low speed aerodynamic certification program and for primary systems development.

A second prototype will make its first flight in January and will be used in the high speed aerodynamic and systems certification program.

Cessna is the world's leading producer of business jet aircraft.

Current & Comment

(Observations on news of interest to the company and the industry will appear regularly in this column.)

BEYOND TREKKIES — Young aspiring astronauts or adults who take their space seriously can queue up to attend sessions at the U.S. Space Camp/Space Academy at The Space & Rocket Center in Huntsville, Ala. Supported by General Dynamics and several other principal donors, Space Camp and Space Academy offer 3 to 10-day programs that include mission simulation, "space walks," science experiments, flight and underwater "weightlessness" training and even "Right Stuff" awards. Plans were announced earlier this month for a second such facility near Cape Canaveral to open next spring. For details on all activities at One Tranquility Base in Huntsville call 1-800-633-7280.

* * *

CAPITAL-ISMS — In the category of "Inviting Leads" and/or "Quotable Quotes," we think that the following words by staff writer James R. Dickenson in the Oct. 3rd *Washington Post* deserve a replay here:

"It may be the end of western civilization as many in Washington have known it.

First the Redskins went out on strike.

Now the U.S. Office of Government Ethics (OGE) is interpreting a 1965 executive order to mean that it is illegal for any employee of the executive branch — from the President down to typists and custodians — to be taken out to breakfast, lunch, cocktails, dinner or any other one-on-one social event by reporters, editors, lobbyists and business executives on expense account."

* * *

A LAST HURRAH — October returns show two big winners and three big losers for GD "plant city" baseball fans. While Land Systems employees in Michigan were rallying around Detroit's division-winning Tigers, St. Louis-based corporate employees toasted the Cardinals' third division championship in the past six years.

At the other end of the standings, the San Diego, Chicago and Fort Worth factions of the company were lamenting (or ignoring) the respective last-place finishes of their locals, the Padres, Cubs and Rangers.

Fans of also-rans can take some consolation in the strong probability that this item would never have appeared here if the Mets or Montreal had overtaken the River City Redbirds at the finish line.

* * *

"I understand evenhandedness — or an open mind — to mean that a reporter should at least listen to and use the quotes and information from both sides of an issue.

His or her selection of quotes and information may tilt the story to one side, but deliberately avoiding or ignoring what one side has to say does not strike me as reporting.

... I'm not speaking against 'investigative' reporting.

... The skeptical or challenging attitude that underlies this kind of reporting — and the 'adversarial' stance of journalism toward our major institutions — can be healthy and useful. But ... let's work together to do it with an 'open mind,' free of stereotypes or preconceived opinions."

... Stanley C. Pace remarks Oct. 3rd before the Society of American Business Editors and Writers

More F-16s Are Ordered By Egyptian Air Force

The government of Egypt has ordered 40 additional F-16s, with deliveries to begin in 1991.

Egyptian Air Force Maj. Gen. Monir Sabet signed a letter of agreement for the purchase on Oct. 8th in Fort Worth.

Egypt previously had taken delivery of 40 Fort Worth-built F-16A/B and 40 F-16C/D Fighting Falcons. The new order is for F-16C/D airplanes powered by the General Electric F110 engine.

The Egyptian Air Force has been flying F-16s since March 1982.

Egypt has requested AIM-7 radar-guided missile capability for aircraft produced under the country's third F-16 order.

Survey Task Force Proposes Recommendations Devised to Improve Employee Communication

A plan to improve ways for employees to communicate with management has been devised by a company task force and approved by Stanley C. Pace, Chairman and Chief Executive Officer, for further study.

The plan offers four recommendations:

- A program for employees to submit written questions that would be assured replies. Called Speak-Up, the program is under study and, if approved, would begin in 1988.

- A leadership communications program to be developed by year's end for training management to listen better and conduct effective meetings. Training will be available in 1988.

- Review of divisional employee suggestion programs. A team will study ways to make feedback more timely, improve cost effectiveness, focus on cost reduction and

minimize processing delays.

- Cataloging "upward" communications programs already in use throughout General Dynamics. The catalog will be shared with all divisions so they may select programs that fit their needs.

The recommendations responded to results from the employee survey that showed dissatisfaction with management's efforts to obtain employees' ideas on work matters. The task force that compiled the plan was co-chaired by Sterling V. Starr, Vice President and Pomona General Manager, and Robert W. Truxell, Vice President and Land Systems General Manager. Employees from Pomona, Land Systems, Abilene and the Corporate Office worked on the team, one of six major task forces addressing corporatewide survey issues.



Survey Report. Chairman and Chief Executive Officer Stanley C. Pace addresses Corporate Office employees Oct. 2nd. Pace briefed the audience on various company issues and answered employees' questions given in advance or submitted from the floor. All Corporate Office employees were invited to attend either of two sessions that day. The briefings responded to requests made in the employee survey for better communications from top management. Another question-and-answer session is scheduled in six months.

Work Hours Policy Problems Cited in Survey 'Not as Big as Expected,' Action Team Says

Detailed results of a study of a new company work hours accounting policy will be presented to some divisions starting late this month.

The two-month study by a special survey action team was prompted by concerns voiced by some employees in the corporatewide employee survey feedback sessions.

The presentations will be made by Edward J. Stiften, Corporate Director-Financial Analysis, who headed the special survey action team. The team, made up of corporate and division employees, was established for the specific purpose of studying the issue as part of the corporatewide survey action plan.

The survey action plan is designed to address issues brought to the attention of management through the employee survey.

Stiften said that the issue in question was a company policy implemented earlier this year requiring employees to record all hours worked. The policy was implemented as part of the company's zero-defects administrative program, he said.

"In employee survey meetings, some employees questioned the need for this policy," Stiften said. "Some employees said they believed it creates detrimental effects, such as discouraging employees from working beyond their normal shift hours to help their programs."

"There also was a concern by employees that the new policy is creating significant budget overruns for many projects or contracts," Stiften said.

Stiften said a conclusion drawn from the two-month study was that "the budget problems involved in the all-hours-worked policy were not nearly as big as we were expecting to find."

In a memo in September, President Oliver C. Boileau reported the team's findings and recommendations and said that Stiften was available to make presentations to employee groups to further explain the issues.

"Therefore, I will be making presentations to divisions that have expressed an interest in further understanding the results of the survey," Stiften said.

"The all-hours-worked policy was implemented to ensure we capture the labor cost associated with unallow-

able activities, such as lobbying, entertainment and certain litigation," Stiften said.

"While most employees are never involved in these activities," Stiften said, "all have the potential to be."

Stiften said that, in addition, the Defense Contract Audit Agency (DCAA) believes the policy is necessary to ensure that fixed price contracts are allocated their fair share of labor and overhead. Without an all-hours-worked policy, he said, the DCAA has stated that there is serious risk of mischarging costs to government contracts.

"The DCAA is requiring contractors to adopt a similar policy, and one by one our competitors are complying," Stiften said.

Stiften said the survey action team first attempted to identify all negative effects of the all-hours-worked policy by questioning engineering managers and selected program managers, finance personnel and contracts and estimating personnel. The team not only sought to measure the impact of the change in the accounting policy but also to understand how management and employees have responded to that change.

Stiften said that the action team, in an attempt to quantify the effects of the policy, selected a division for close study that appeared to have the highest incidence of employees working beyond their normal shift hours. The team then selected two of the division's departments that were believed to be experiencing the highest rates.

"After examining data for 600 employees, there were two dominant conclusions," Stiften said.

"First, most contracts would be impacted minimally by any alternative allocation method," he said.

"Second, the perception that the all-hours-worked policy is creating significant budget overruns for many projects or contracts is incorrect," Stiften said. "Only those projects or contracts that involve few employees — 10 or less — for one- or two-month periods have the potential to be impacted by more than one percent."

"In addition, because the accounting impact is so small," Stiften said, "the action team concluded it would be best to retain the current accounting practice rather than risk the disruption of changing to another method."

Employees Combat Muscular Dystrophy In Detroit Bed Race

Land Systems employees raced five beds in a Detroit-area race that raised \$9,000 to combat muscular dystrophy.

General Dynamics was the only company to have multiple entries in the race held in Detroit's Greek Town and sponsored by the Muscular Dystrophy Association (MDA). The Land Systems beds, raced by six-person crews, took three of the top four positions.

The top-finishing Land Systems beds were created by Detroit Tank Plant, M1 Planning and Material Technical Support employees. The other Land Systems beds were fielded by M1 Finance and Sterling Plant employees. Each of the 35 teams in the race decorated the beds for display before the race and then stripped them down for the race.

"Everyone who participated in the race was a winner because we all had fun and the MDA got \$9,000," said Christopher V. Scalise, Senior Procurement Representative in Material Technical Support, who coordinated the participation in the race. "Next year we are going for No. 1," he said.



First-Hand Knowledge. Faith R. Whittlesey, U.S. Ambassador to Switzerland, boards a U.S. Air Force F-16D at Ramstein Air Base, West Germany, prior to a demonstration flight. Whittlesey gained first-hand knowledge of the Fighting Falcon while flying with USAF instructor pilot Maj. Jeff Fee. The government of Switzerland is considering a purchase of the F-16.

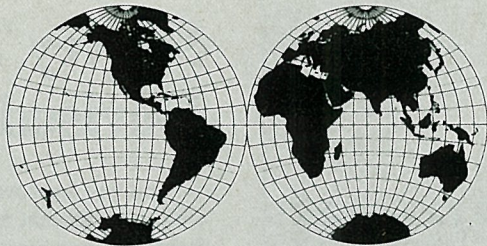
Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	Aug. 1985	Aug. 1986	Aug. 1987
Salaried			
Government Bonds	15.3%	14.2%	4.6%
Diversified Portfolio	23.8%	39.6%	39.4%
Fixed Income	12.4%	12.1%	11.7%
Hourly			
Government Bonds	15.4%	13.6%	4.8%
Diversified Portfolio	23.2%	40.4%	41.4%
Fixed Income	12.4%	12.1%	11.7%
GD Stock Closing Price	\$77.75	\$75.00	\$70.75

GENERAL DYNAMICS

World

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Around the World

CHQ: Lyle W. Cameron joined as International Offset Director . . . Thomas A. Acuff as Operations Director . . . Dennis E. Fiehler was appointed to Finance Director . . . Michele A. Schreiner transferred from Convair and was promoted to Senior Auditor . . . Joseph E. Gallagher transferred from Convair and was promoted to Corporate Financial Planning Manager . . . Richard F. Jordan transferred from Pomona's Camden Facility and was promoted to Corporate Manager-Financial Analysis . . . Sharon K. Ball was promoted to Corporate Benefits Specialist.

Fort Worth: John F. Oppie was appointed to Director of Financial Planning and Controls . . . John H. Birdwell Jr. was promoted to Production Management Manager . . . Wayne L. Bradshaw Jr. to Material Cost Supervisor . . . Lovic H. Brandon Jr., Derl S. Lacefield and Billie G. Read to General Foreman . . . Kenneth R. Brown and Larry M. Burden to Purchasing Agent . . . Patrick S. Clark to Senior Logistics Engineer . . . Ronald D. Cody to Quality Control Field Engineer . . . David W. Corbin and Charles Medlock Jr. to Material Planning Supervisor . . . Stephen K. Ford to Senior Engineering Administrative Assistant . . . Judy C. Gaskamp to Engineering Administrative Supervisor . . . John D. Hearne to Manufacturing Support Equipment Engineering Specialist . . . George E. Law Jr. to Engineering Chief . . . Thomas M. Lee to Foreman . . . Thomas R. Lenning to Senior Field Service Engineer . . . David L. Little to Inspection Supervisor . . . Jennifer A. Lofton to Senior Quality Assurance Engineer . . . Richard L. Miller to Quality Assurance Chief . . . John M. Mings to Logistics Management Systems Specialist . . . Lawrence E. Mosley to Tooling Supervisor . . . Roger A. Nelson to Logistics Group Engineer . . . Jerry W. Raby to Senior Program Analyst . . . Steve Rothrock to Manufacturing Control Supervisor . . . John E. Smith to Assistant Project Engineer . . . Jack H. Stellar to Calibration Supervisor . . . Mark W. Swisher to Technical Group Supervisor . . . Richard J. Vela to Subcontract Management Coordinator . . . Peter A. Wynne to Engineering Administrative Group Supervisor.

Electric Boat: Edward J. Baker and David M. Bower were promoted to Trade Planning Chief . . . Roland G. Bourdon to Program Management Chief . . . John C. Helming to Assistant Program Management Chief . . . Charles M. Banfield to Nuclear Surface Ship Program Manager . . . George W. Williamson to Shipyard Support Manager . . . Bruce E. Johnson, Frank H. Larson, Glenn O. Mortoro and Karl J. Paecht to Engineering Supervisor . . . Robert G. Delicato and Roland J. Gaucher to Design Supervisor . . . Theodore H. Crouch, William J. Hunt and Thomas J. Miller to Senior Planning Supervisor . . . Robert Andreozzi and Michael A. O'Neil to Trade Planning Supervisor . . . Ralph A. Carchidi Jr. and George Medina to Foreman . . . Thomas E. Hagist to Chief Nuclear Test Engineer . . . John A. Girard to Assistant Chief Nuclear Test Engineer . . . Robert V. Barclay, Richard E. Eames, Emmett F. Eldridge, Charles T. Kripps, David W. Murley and Linda S. Roberts to Group Trade Planner . . . At Quonset Point: Robert D. Savini was promoted to Superintendent . . . John J. Lachance to General Foreman II . . . Paul Glittone to Group Trade Planner . . . At Idaho: Larry J. Frank to Accounting Supervisor . . . John F. Cone to Rad Audit Foreman . . . Marnel V. Bullock to Foreman . . . At Kesselring: Jeremiah J. Mahoney to Senior Ship Superintendent . . . Steven A. Sroka to Assistant Superintendent . . . George J. Gregory Jr. to Admin/Control Supervisor.

Electronics: Mary W. Ogino was promoted to Administrative Financial Specialist . . . Michael L. Suttan to Marketing Specialist . . . Roger K. Clark to Senior Financial Analyst . . . John R. Syverson to Quality Assurance Engineer.

Convair: Robert P. Boriss and Raymond C. McNamara were promoted to Program Manager . . . Matthew D. McManaman to Quality Assurance Manager . . . Ronald Bickel to Engineering Chief . . . Curtis S. Vonder Reith to Project Engineer . . . Eric N. Sillman to Publications Chief.

Space Systems: Raymond J. Gorski was promoted to Marketing Manager . . . Earl J. Banes, John N. Coulson Jr. and Charles Wardinski to Manufacturing Engineering Chief . . . Norman D. Viste to Project Engineering Chief . . . Brian W. Dodds to Tooling Supervisor.

Pomona: Rick C. Chiang was promoted to Senior Manufacturing Engineer . . . Michael C. Layland and Rodger J. Smith to Group Engineer . . . James N. Wassman to Senior Provisioning Representative.

Valley Systems: Renato A. Valero was promoted to Project Engineer.

Land Systems: Thomas A. Bledsoe was appointed to General Procurement Director . . . Donald L. Gilleland to Communications Director . . . Fred W. Wahlgren to Major Systems Procurement Director . . . Wayne J. Maiers was promoted to Accounting Manager . . . Thomas R. Kozlowski to Plant Engineering Supervisor . . . Robert E. Doyle to Maintenance General Foreman . . . Glenn F. Klaus to Integrated Logistics Support Planning and Control Manager . . . George W. Schock to Plant Security Chief . . . Donald R. Bornemeier to Proposal Development Manager . . . Gary W. King to Plant Services Manager . . . Marilyn S. Welch to Material Control General Supervisor.

Data Systems: At Central Center, James H. Gault was promoted to Engineering Software Chief . . . Waldo J. Bither Jr. to Engineering Software Supervisor.

GDSC: John J. Staud was appointed to Domestic Operations Director . . . J.R. Hundley to Business Development Director . . . LeRoy E. Halcomb was promoted to Maintenance Squad Group Leader . . . William R. Conley to Quality Assurance Branch Leader.

Cessna: Milton Sills was promoted to Product Engineering Director . . . David Bouffard to Training Manager . . . Scott Sarver to Special Missions Program Administration Engineer . . . Tommy Doty to Senior Buyer . . . Ronald D. Williams to Manufacturing Engineer . . . Lyle Bitker to Reliability Supervisor . . . Tsu-Liang Chang to Senior Structures Engineer.

F-16 Vertical Fin Component Will Be Displayed In New Hall at National Air and Space Museum

The Smithsonian Institution's National Air and Space Museum will display an F-16 vertical tail component in a new hall exhibiting the use of computers in aerospace.

The tail fin was recently shipped to Washington, D.C., from Fort Worth following a restoration effort coordinated by the division's Manufacturing Development Department. The component was formerly used in research and development and had been in storage in the F-16 factory for some time.

The display will include a description of how computers were used in the design and fabrication of the component and its composite skins. General Dynamics will be named on the display and at the entrance to the gallery, said Paul Ceruzzi, Associate Curator of the National Air and Space Museum.

The gallery is scheduled to open in May 1989 and is expected to be visited by about 10 million persons annually.

The exhibit hall will include a number of displays related

to advanced aircraft concepts, including vehicle prototypes, satellites and a Space Shuttle simulator, according to Ceruzzi.

The donation is being made at the museum's request. "They came to us because they consider us to be the leader in advanced airframe manufacturing," said John C. Stevens, Writer/Editor in Manufacturing Development who was instrumental in coordinating the donation.

Frank Spelce, Lead Engineer for composites in Manufacturing Development, oversaw the restoration of the component as it was returned to a production configuration during a period of several months.

The component will be encased in Plexiglas in the exhibit area. It will include a functioning strobe identification light on its upper edge, Stevens said.

Computer-controlled tape-laying machines are used to lay graphite-epoxy material in the fabrication of composite tail skins at Fort Worth. Computer-controlled machines are also used in trimming, curing and drilling the parts.

Eliminating Parts Shortages Is a Key to Competitive Success By Eric M. Solander

In a major cost-competitiveness effort, Pomona is taking important steps to eliminate parts shortages by changing the total material acquisition process throughout the division.

Sterling V. Starr, Vice President and Pomona General Manager has initiated a plantwide campaign called Zero Material Shortages under the direction of Robert D. Salyer, Vice President-Material, and Charles D. Anderson, Vice President-Production.

"We receive \$1.3 million worth of purchased material a day, which represents 50 to 60 percent of the cost of each of our products," Salyer said. "Shortages raise these costs." Salyer added that material acquisition, which historically accounts for the highest costs at the division, had the biggest potential for competitive cost savings.

"Reducing or totally eliminating material shortages has been called a key to the division's success in an increasingly competitive environment," Salyer said.

"Many actions have already been taken and many more are planned," Salyer said. "The overall purpose is to change the culture and philosophy of the material process from start to finish."

Salyer said the ideal situation occurs when the parts used in production are at the right place at the right time. If the part isn't there, one must be expedited at premium cost. "This interrupts the normal cycle while we take the time to fill the shortage," he said.

Although the actual quantities are relatively low considering there are more than 30,000 part numbers, a peak was reached in July 1986 when nearly 700 individual part numbers were not available. "This meant that more than 125,000 individual items were not on the floor when the factory needed them," Salyer said.

To help solve this problem, a company Tiger Team was formed with representatives from the Engineering, Quality, Program Offices and Production and Material departments.

After studying the various problems and processes involved and after talking with employees, the troubleshooting team came up with more than 300 recommendations to achieve a zero material shortage status.

The recommendations covered every aspect and included reorganizing the material functions into one department, an action taken late last year. The realignment has enabled Salyer to better manage all phases of the material process.



Cost-Competitiveness Effort. Pomona stock clerks Mario Bates (on ladder) and Bryant Long maintain the inventory of assembly kits in the Phalanx production area. Accurate inventory control is a key element in the divisionwide effort to reduce parts shortages.

The concept is working. The number of shortages has been reduced by 50 percent in the past year and is still going down.

Other improvements to be installed include better planning so purchase orders can be placed on schedule to support supplier lead times, improving the dock-to-stock process, increasing inventory accuracy and rearranging facilities to assure better flow control.

On the factory floor, production departments are working to improve manufacturing control to the production schedule. The goal is to reduce the number of requests for outside purchased parts that must be expedited out of the normal system. The same applies to those parts which are

manufactured in-house.

Training programs also have received top priority. "Often, there is so much to do we don't take the time to adequately train our new people," Salyer said. "We need everybody to be fully aware not only of how to do his or her own job but of the importance of their work in the overall scheme."

Shortages have been an industrywide problem for years. "We had learned to live with them as long as they didn't impact on our deliveries," Salyer said, "but in recent months we have shown that we don't have to live with material shortages. Every success gives us added commitment to do things better."

Space Systems Division Gears Up for Major Launch Vehicle Production

Space Systems factory facilities and production processes in San Diego are undergoing extensive improvement as the division gears up to build 18 commercial Atlas/Centaur launch vehicles, begins fabrication of 10 Centaurs for Titan and continues to develop and compete for advanced space programs.

"A dominant emphasis on quality is the cornerstone of all phases of our factory modernization," said Jack D. Coffman, Division Vice President of Production, "including improvements to both facilities and processes. We're

also doing things we've never done before with manufacturing technology."

"These technologies will find a place with programs of the future like the Advanced Launch System (ALS) and Adaptable Space Propulsion System (ASPS), where producibility is a key driver," said Coffman. Both programs are under study at Space Systems. Manufacturing specialists and design engineers will be colocated during the conceptual design stages.

Selected automation, refurbished tooling and optimum

production flow are being incorporated into the factory environment on current Atlas/Centaur and Titan/Centaur production. Space Systems is building the Atlas/Centaurs for the commercial market, using a mature and proven design. The Centaur upper stages are for the Titan launch vehicle. Test data from Atlas/Centaur and Titan/Centaur will ultimately be used for ALS and ASPS.

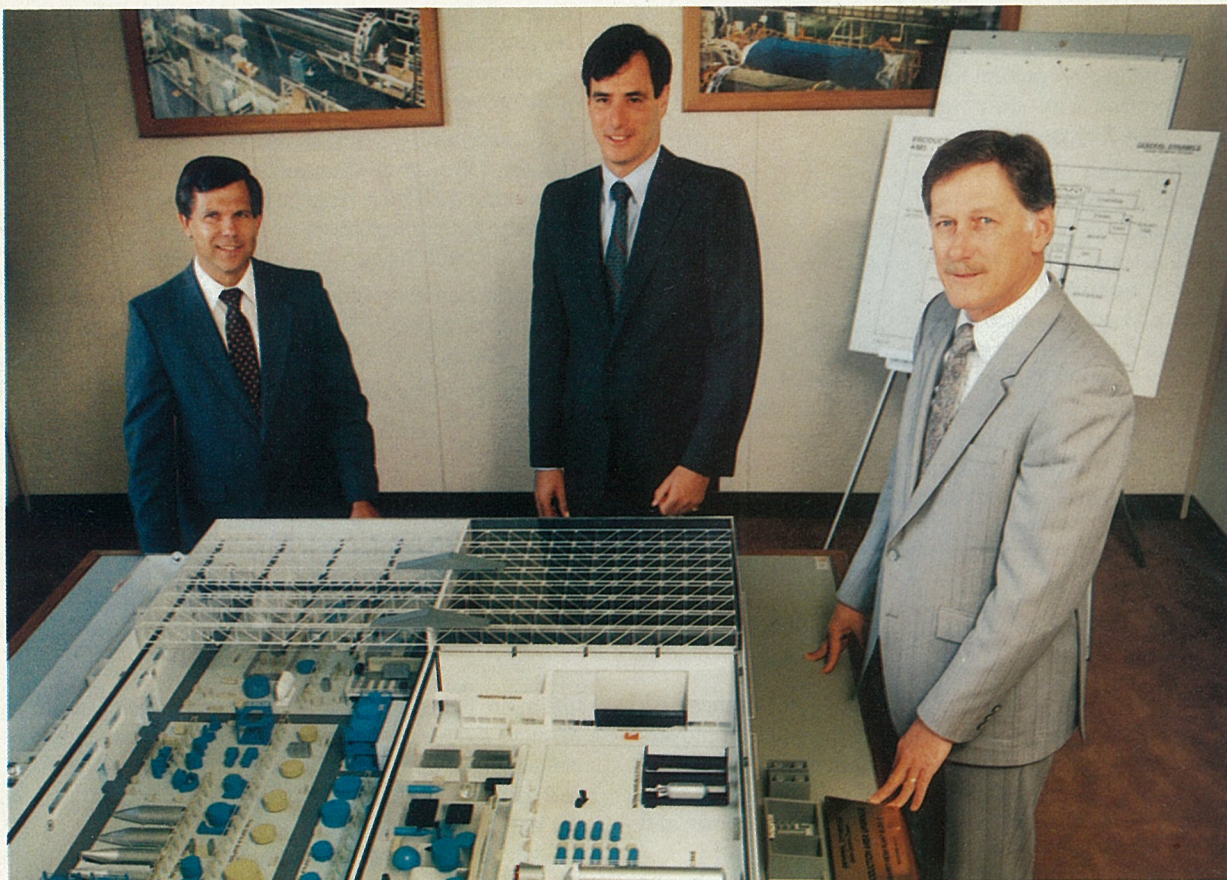
Modifications to the main factory area in San Diego will improve working conditions by providing better lighting and the strictly controlled environment necessary to assemble space hardware. The major assembly area — approximately 80,000 square feet — will be a cleanroom. Employees working in this area must wear protective clothing. All access to the area will be limited.

Several manufacturing technologies are being incorporated into the factory to improve quality, including automatic spot and seam welding and in-line automated radiographic inspection. Previously, an Atlas or Centaur tank section would have been removed from the line and taken to a leaded room for weld X-ray inspection. Now a shielded apparatus will X-ray at the same time welding is taking place. If there is a problem, the welder can back up and rework instantly.

Space Systems will use an automatic riveting system that simultaneously drills, deburrs, installs and rivets. These automated systems lend themselves to statistical process control to monitor the quality of the hardware at the point of production.

Not a capital item, but still one of the biggest aspects of factory modernization, is operations decentralization, according to Coffman. Space Systems' work is being divided among various locations, including some of the manufacturing to be done by Space Systems employees at Vandenberg AFB and Cape Canaveral launch sites. This will help level the workload and better utilize manpower between launches.

Beyond capital items and improvements to the production process, Space Systems will incorporate ideas from the employee survey to improve communication both up and down in the factory areas. "We want to have a real objective flowdown all the way to the individual employee from top management," said Coffman. "We want to stimulate people to contribute because they want to, not because they must."



Extensive Improvement. Looking over the three-dimensional model of Space Systems' main San Diego factory area are (left to right) Jack A. Lambert, Director-Manufacturing and Industrial Engineering, Michael C. Gass, Facilities Manager, and Jack D. Coffman, Division Vice President-Production.

AFTI/F-16 Team Is Honored with AFA's Theodore von Karman Award

The national Air Force Association recently presented the Theodore von Karman Award, one of the organization's highest honors, to the Advanced Fighter Technology Integration (AFTI)/F-16 Program Team in ceremonies in Washington, D.C.

The AFA's announcement of the award said the AFTI/F-16 team has "pioneered a new era of aviation history" and accomplished what is "easily the most complex, comprehensive fighter integration project" in the history of manned flight.

Charles A. Anderson, Vice President and Fort Worth General Manager, Max E. Waddoups, the company's AFTI/F-16 Program Director, Michael R. Griswold, Chief Engineer on the program, and Willie S. Bennett, former AFTI/F-16 Chief Engineer, accepted the award on behalf of General Dynamics at the 1987 Air Force Association National Convention.

The presentation was made at the AFA-sponsored Secretary's Luncheon, with Air Force Secretary Edward C. Aldridge Jr. attending.

Lt. Col. Donald Ross, retired, represented the U.S. Air Force members of the AFTI/F-16 team in accepting the award. Colonel Ross was the Air Force's AFTI/F-16 Program Manager in 1986, the period covered by the award. AFTI/F-16 joint team members representing NASA, the U.S. Navy, the U.S. Army and subcontractor firms were also recognized.

The Theodore von Karman Award is presented for the year's most outstanding contribution in the fields of science and engineering. The AFA award announcement said the AFTI/F-16 team members were selected as recipients "for their vision, innovation and perseverance" in accomplishing many aviation firsts in the program.

"The AFTI/F-16 Program has dramatically demonstrated new combat capabilities that are achievable through a highly integrated weapon system," the AFA said. "The successful development and flight demonstration of the AFTI/F-16 Automated Maneuvering Attack System (AMAS) is a landmark aviation achievement that extends new maneuvering freedoms and combat automation alternatives to the future employment of tactical airpower.

"During 1986, the accomplishment of numerous flight demonstration milestones brought to fruition over a decade of planning, development, integration and testing."

The award announcement listed several aviation firsts accomplished in Phase II of AFTI/F-16 testing, including automated 5g curvilinear weapon delivery as low as 200 feet above ground level, ground collision avoidance protection throughout 360 degrees of roll, single-seat operation of a multisensor avionics suite during low-altitude



Award for Outstanding Engineering Achievement. Charles A. Anderson, Fort Worth Vice President and General Manager (left), and Max E. Waddoups, division Director of Technology Demonstrations, display the AFA's von Karman Award, which was recently presented to the AFTI/F-16 program team in Washington, D.C.

maneuvering attack profiles and interactive voice communication between a pilot and a fully integrated digital avionics suite.

"The successes of the AFTI/F-16 AMAS demonstration have pioneered a new era of aviation history enabled by the integration of digital fly-by-wire technology and digital avionics," the AFA said. "The AFTI/F-16 results clearly establish a new direction for system integration and combat automation that is essential to sustaining the technological advantage of our future combat aircraft."

"The contributions of this select team will have far-

reaching contributions to the future defense of the Free World," the AFA said.

Fort Worth is the prime contractor in the AFTI/F-16 Program, which has explored how new technologies can be combined to increase the effectiveness of pilots and airplanes. Aircraft modifications have been completed at Fort Worth. The major flight testing has taken place at Edwards AFB, Calif.

Phase I tests, conducted in 1982 and 1983, evaluated decoupled modes of flight and included aviation firsts such as turning the aircraft without banking.

Space Systems Gets Contract for Study Of Rocket Boosters

Space Systems Division has been selected as one of two contractors by NASA's Marshall Space Flight Center to conduct a systems study of liquid rocket boosters (LRBs) for the Space Transportation System.

Space Systems and Martin Marietta will carry out nine-month parallel studies of pressure-fed and pump-fed LRBs to evaluate various configurations and propellant combinations and recommend design concepts for both.

The studies will examine the feasibility of using LRBs as the primary booster element in the shuttle system. Once developed, they might also be used to boost other future launch vehicles such as Shuttle C, an unmanned cargo-delivery version of the shuttle, or the Advanced Launch System (ALS), the next-generation Air Force launch vehicle now under study at Space Systems.

"This is a significant win for our division," said Dr. Alan M. Lovelace, Space Systems Vice President and General Manager. "It presents us with the opportunity to capture a share of NASA shuttle business through the next decade." Lovelace said most of the study will be performed in the Space Systems Huntsville facility that is adjacent to Marshall Space Flight Center.

"The study will draw upon the experienced Space Systems team," said Howard M. Bonesteel, NASA Advanced Programs Director, "from systems analysis and integration engineers defining the requirements to the design engineers and production specialists who will produce a hardware solution."

Analyses will include rigorous assessments of performance, systems safety, reliability and integration of the LRB with the current Space Transportation System and existing launch facilities, as well as recovery, reusability and operational and development costs. Results should be available next summer to support NASA management decisions.

Fort Worth Hosts Symposium on Technology; F-16 Program Is Praised as a Success Story

Fort Worth recently played host to an F-16 Industrial Modernization Incentives Program Symposium that was attended by about 250 persons from the military and contractor communities.

Most of the attendees play a role in the F-16 program, while others were present for the technology-sharing aspects of the symposium.

Maj. Gen. Robert D. Eaglet, the Air Force's F-16 Program Director, was principal speaker at the symposium's opening session. General Eaglet praised the success of the F-16 program in his remarks. "Since the very inception of the program, we've never missed a deadline and we've never blown a budget," he said. "We're not even halfway through, in terms of the firm orders."

He also discussed the new fighter aircraft that are cur-



General Eaglet

rently being developed in other parts of the world as potential competitors to the F-16. "Ten years after the F-16 was introduced, they (a number of international aircraft manufacturers) are trying to achieve the levels of performance that we have had operational now for eight years," the general said.

"Nobody's trying to get better specific power statistics or maneuverability (than the F-16s)," he said.

Another key speaker at the symposium was Charles Hooper, Director of Manufacturing at Air Force Systems Command (AFSC) Headquarters. Hooper challenged industry representatives to create technological developments that will "bring jobs back to America."

In addition to seminar sessions at a local hotel, the symposium included technology demonstrations at Fort Worth's facilities.

The F-16 Industrial Modernization Incentives Program has saved the Air Force hundreds of millions of dollars. Over the life of the program, it is expected to save the Air Force more than \$1 billion.

Firefighters Observe Fire Prevention Week

Convair's Fire Department was busy in October with Fire Prevention Week activities to keep all employees aware of fire safety on the job and at home. Convair's fire prevention program, the first line of defense against fires, encompasses education, plan reviews, inspections and plant patrols.

Four San Diego-based divisions are supported by the Convair Fire Department. The Kearny Mesa and Lindbergh Field plants each have a fire station, consisting of a fire engine company and ambulance. Firefighters are quali-

fied in fire fighting techniques and are certified Emergency Medical Technicians. Fire service training programs, drills and seminars enable the firefighters to sharpen their skills and maintain their confidence for emergencies throughout the year.

Drills provide experience for the firefighters by simulating the fire situations that could be found in an industrial environment. Drills also provide practice in using all types of firefighting equipment such as hose, breathing apparatus and forcible entry tools.

Overseas Assignment for M1A1 Tank Expert Was Worth Repeating By Jack Price

This is the fourth in a series of articles on the experiences of General Dynamics employees and their families living and working abroad on foreign assignment.

A Land Systems employee found an overseas assignment so rewarding he decided it was worth repeating.

William P. (Pat) Pietrangelo, Land Systems International, is about nine months into his second assignment as a field service representative in West Germany. He works in support of the U.S. Army's 3/35 Armor Battalion in its conversion from M60 tanks to the new M1A1 Abrams.

Pietrangelo assists in the operational and maintenance training for the soldiers assigned to the tanks. He also investigates and reports problems and coordinates installation of modifications.

"The job and the overseas living got into my blood during my first assignment overseas," he said. "I grew restless soon after I had returned to the States, and when the opportunity for a second assignment came, I quickly signed up."

Pietrangelo said that although there are not many differences between his first trip and his second, he is enjoying the second one more. "It is more relaxing this time," he said. "We knew what to expect the second time around and had none of the anxieties of the unknown."

Because of Pietrangelo's experience, he did not undergo the normal training program for his second assignment. First-time candidates go through an extensive screening process and a skills assessment survey that can take up to eight hours to complete.

Interviews with candidates include personnel, cultural and family adaptability assessments. Training programs for final candidates include classroom instruction and outside instruction and can last as long as five weeks.

The training varies with the job and the location. Land Systems Field Operations has provided support throughout the world with locations as different as Korea and Saudi Arabia.

The main thrust of the operation, however, remains the support of the M1A1 Abrams main battle tank in the field in Europe.

The fielding of the Abrams begins about a year before the actual delivery. The time is used to familiarize receiving battalion personnel with the program, to determine equipment needs and to train mechanics on the M1A1 systems and their components.

The training of the soldiers takes place in the United States or at the 7th Army Training Center at Vilseck, West Germany.

As battalions come on line for vehicles, Land Systems Total Purchase Fielding personnel in Europe assist the Army by ensuring that each unit receives the repair parts, special tools, test sets and technical manuals they need. They also ensure that the units receive their authorized additional machine guns, cargo trucks, test vans, generators and related equipment. Tracking shipments of goods from the United States to Europe and confirming deliveries constitute a major portion of the daily activities of Land Systems Total Package Fielding representatives before and after delivery of the tanks.

The Abrams tanks arrive in Europe at Bremerhaven, West Germany, and Rotterdam, the Netherlands. From the ports, the tanks are transported by rail either to Vilseck or to reserve storage sites. The Vilseck tanks are issued to active armor battalions, and the reserve tanks are stored for use in battle.



William P. Pietrangelo Discusses Fine Points of the M1A1 with Sgt. 1st Class William R. Lord, a U.S. Army Tanker

Deprocessing at Vilseck involves removing protective coatings and coverings from vehicle surfaces, installation of such stowed items as headlights and periscopes, government inspection of vehicles, corrective maintenance and final inspection before a tank is issued to a unit. Land Systems personnel work as part of the deprocessing team, which also provides on-the-job training to the soldiers as they work together to ready the tanks for issue.

Most of the deprocessing is done at Vilseck, but Land Systems personnel also travel to other areas of West Germany to help ready the tanks for issue.

Land Systems field services representatives and a reliability engineer are assigned to units that store the Abrams for emergency use.

Personnel maintaining the stored Abrams are from West Germany, Holland or Luxembourg, and communicating with them to provide training provides an added dimension to normal field support.

Land Systems representatives assigned to the reserve unit also support the REFORGER field exercises, an annual full-scale NATO exercise that uses the stored Abrams in the maneuvers.

Field service representatives such as Pietrangelo also are assigned to work with active duty Army battalions converting from M60 and M1 tanks to the M1A1. They help the soldiers with the weapon system and component troubleshooting and repair and the use of test sets and technical manuals. They also support the battalions' maneuvers and gunnery training.

The representatives' efforts cover all aspects of the vehicle from fire control through automotive operation. They provide the vital link between the soldiers and the manufacturing plants in Warren, Mich., and Lima, Ohio, that enables Land Systems to improve the Abrams tank systems based on the soldiers' field experience.

The Land Systems staff is part of the Army's Close Combat Vehicle Fielding Team whose headquarters are at

Vilseck. The staff either answers the Army's questions concerning the Abrams or poses them to stateside personnel. The timely response to questions has helped smooth the M1 fielding activity.

The close working relationship among the Fielding Team, the Army's Project Manager's Office, associated contractors and Land Systems has improved vehicle quality and reliability.

William F. Barnes, Land Systems Chief of European Field Operations, said that working in West Germany provides a pleasant and a unique experience with a number of interesting challenges.

"To deprocess tanks, ensure proper vehicle loading on ships, attend ethics and safety briefings and participate in field exercises, Land Systems personnel must drive hundreds of miles on autobahns where traffic averages 80 miles an hour but can just as easily stop dead in traffic jams 40 miles long," he said.

Barnes cited the retrieval of tanks that have sunk in mud holes — usually old cellars — in training areas as an example of the kind of challenge handled by his team. The only way to save the power pack is to pull it from the tank, regardless of the weather, and pump the water and mud from the engine and transmission.

Last month, drawing of the M1A1s from reserves began for the 1987 REFORGER exercise, and the Land Systems staff is still talking about the Canadian Army Trophy gunnery competition won by a U.S. Army platoon driving Abrams tanks.

"It has certainly been a busy year," Barnes said, "and 1988 is already shaping up to be just as active."

The job, settling in and adapting to their new lifestyle have also kept Pietrangelo, his wife, Christine, and their children, Steven, 5, Mathew, 4, and Davis, 15 months, busy but have not kept them from a side trip to Denmark during their nine months in Europe.

"We plan to visit every major city in Europe before we go home," Pietrangelo said.

Pietrangelo noted that traveling in Europe with his family does not present any special problems. "West German establishments accept children readily," he said. "When we eat out, my wife and I always receive courteous treatment, but when we bring the children, the restaurants all try to make our visit a special occasion."

Language difficulties are breaking down as the family picks up German. Pietrangelo said that his oldest son, Steven, who has just started at the American school where German is a required course, is the family expert.

"He's handy to have along when we go shopping," he said.

Pietrangelo has about two more years to spend in Europe on his present assignment. In spite of the pleasures he's experiencing in his present lifestyle, he isn't sure whether he will sign up to extend it.

"We'll have to evaluate it when it comes up," he said. "My wife's folks and mine are a fairly close family." He said that his parents and his in-laws plan trips to Europe later this year or early next year to see their grandchildren. "They may even spend some time with us," he said.

Pietrangelo lives and works near Memmelsdorf, which is relatively close to the East German border. He said he was not concerned about the proximity. "We were only about 15 kilometers from the border during my first assignment, and it didn't bother me then," he said. "I figure that the work I am doing helps keep them on their side of the border."



Enjoying the Town. An afternoon stroll in Memmelsdorf, West Germany, occupies William P. Pietrangelo, a Land Systems field service representative, his wife, Christine, and their children, Steven, 5, Mathew, 4, and Davis, 15 months. Pietrangelo is one of the Land Systems employees helping the U.S. Army field the Abrams M1A1 main battle tank in Europe.

Constitution and Tank Production Anniversaries Are Celebrated

By Dave Lange

When the authors of the Constitution wrote about the need to "provide for the common defence" in their era of the horse and saber, they no doubt imagined a requirement for masses of foot soldiers led by legions of cavalry.

Two hundred years later, the foot soldiers remain. But for the last 50 years, the spearheads of U.S. ground forces have been formed by mechanized armored leviathans called tanks.

On Sept. 17th — exactly 200 years after the signing of the Constitution — the U.S. Army Tank Automotive Command (TACOM) and Land Systems coupled the tank's role in preserving the Constitution with that document's bicentennial in a ceremony at Detroit Arsenal Tank Plant (DATP).

"The bicentennial has a very special meaning for us," Charles M. Hall, Land Systems DATP Plant Manager, told the audience. "Our past consists of 46 years of tank production (at DATP) during which we've helped defend the Constitution around the world."

The ceremony, dubbed "Defenders of the Constitution," recognized DATP's contribution to the nation's security. Those contributions began with production of the plant's first tanks in 1941, a year after construction began on the facility. DATP has rolled out over 43,000 tanks, including 22,234 during World War II. Its tanks also fought in Korea and Vietnam.

DATP's assembly lines run today, turning out Land Systems' M1A1 Abrams tanks. A recently completed Abrams, christened the "Constitution Tank" and parked alongside the rostrum, was accepted by a government representative who signed a contract for the vehicle during the ceremony. A brass plaque was mounted inside the turret to commemorate the occasion.

The ceremony also marked the end of production of the M60 tank. The M60, which went into service in 1960, serves with the ground forces of the United States and a dozen other nations. The last of 15,221 M60s was parked across from the Constitution Tank during the ceremony. The final M60, one of a 94-tank order for Egypt, was completed Aug. 31st. The interior of its turret has a brass plaque noting the tank as the last M60 produced by General Dynamics.

The M60 represented the past and the M1A1 the present during the ceremony at DATP. A model of a Land Systems design for a 21st century tank was displayed to symbolize the future.

Maj. Gen. William S. Flynn, TACOM Commander and the gathering's principal speaker, brought home the real reason for the ceremony. "We seldom think seriously about



Tank Talk. Maj. Gen. William S. Flynn, Commanding General, U.S. Army Tank Automotive Command, addresses the audience at the Detroit Arsenal Tank Plant during the "Defenders of the Constitution" ceremony marking the bicentennial of the Constitution. Flanking General Flynn are the last M60 tank produced by Land Systems (left) and the M1A1 Abrams "Constitution" tank.

such essentials as air and water, sunlight and gravity and freedom," Flynn said. "The first four of these are natural aspects of the world around us. The last one, freedom, is a natural product of constitutional government."

"This is not an exaggeration of the importance of our Constitution," Flynn said. "Our lives and those of our families and communities would be as much at risk as if any of the laws of nature were to fail. I urge each and every one of you to reacquire yourself with this magnificent document, the Constitution. It's ours to respect, ours to protect and ours to use."

Brig. Gen. Peter McVey, Program Executive Officer for Close Combat Vehicles, also addressed the audience. Lt. Col. Michael J. Neuman, DATP Commander, served as master of ceremonies.

Recognized in the audience were retirees and current workers from the M60 and M1 programs, as well as

representatives of the 3rd Armored Division's 1st Platoon, Company D, 4th Battalion, 8th Cavalry. That Abrams-equipped unit recently won the Canadian Army Trophy (CAT) shoot, a biannual competition among NATO tank crews. A U.S. unit had never before finished first in the prestigious event.

General McVey hailed the M1s and their crews for their CAT shoot effort. "I have never seen a better performance," he said. "We didn't know how good it was until we received the targets. Every trigger that was pulled, every round that was fired, hit a target."

"What you need to know is that this is a total team effort," General McVey continued. "You, the workers here at the plant, provide a quality product. I'd like to tell you that you broke the code, and we here in the business of support to our army in the field intend to make our first-place performance of the Abrams habit-forming."

Special Musical Score Made Pope John Paul II Smile at Mass

By Joe Stout

Fort Worth's Eugene Gwozdz recently had an experience that he'll remember all his life. He made Pope John Paul II smile during the pontiff's visit to the United States in September.

Gwozdz, an accomplished musician, arranged the recessional hymn that was played at the close of the papal Mass in San Antonio, Tex., on Sept. 13th. He also played synthesizer in the orchestra at the Mass.

In his arrangement, Gwozdz embellished the hymn

"Joyful, Joyful We Adore Thee," from Beethoven's 9th Symphony, with brief strains from a traditional fanfare, "The Trumpeter of Krakow," and the Polish national anthem. The Pope is a native of Krakow, as are Gwozdz's parents.

The "Trumpeter of Krakow" fanfare is played hourly from St. Mary's Cathedral in the town square, so Gwozdz was sure the pontiff would recognize it.

"When the Pope heard the 'Trumpeter of Krakow' fanfare he smiled and laughed and said something to one of the priests at the altar, then waved to the orchestra," Gwozdz said. "It was a very special moment for me, although it didn't sink in fully until later when I saw a videotape of the (televised) Mass. I guess I was too absorbed in playing at that moment."

Gwozdz is a contract employee who has worked in video production with Fort Worth's Multimedia Department for the last three years. He also plays piano with Casa Manana Summer Musicals in Fort Worth.

Gwozdz holds a bachelor's degree in radio/TV communications. His usual work at the division does not involve music. Aware of his ability to play several instruments, staff members in the Multimedia Department encouraged him to try writing music when they were seeking original compositions for company films. "That was what really got me started at composing," he said.

Among other works, Gwozdz has written music used in a General Dynamics television commercial that features the U.S. Air Force Thunderbirds. He also wrote the score for the F-16 video production that was shown at the 1987 Paris Air Show, and he has written soundtracks for Fort Worth and Land Systems marketing films.

Gwozdz got an opportunity to arrange music for the papal Mass through his brother, Lee Gwozdz, who is musical director for the Roman Catholic Diocese of Corpus Christi, Tex. A committee selected Gwozdz and two other composers from a list of several who were nominated for the privilege.

Lee Gwozdz conducted the orchestra and choir at the Mass. Eugene said his brother asked him to play synthesizer just days before the event because there was no other keyboardist available who was familiar with the electronic instrument.

In addition to Eugene and Lee, another brother, Rick Gwozdz, played organ at the Mass. Their sister, Donna, turned pages for Eugene. The Mass was even more of a family occasion because Eugene's wife, Hortencia, and their two children, ages 4 and 1, accompanied him to San Antonio.



Eugene Gwozdz at the Organ at the Casa Manana Theatre in Fort Worth

Kansas Air National Guard Squadron at Wichita Activated as F-16 Unit

The Kansas Air National Guard's 184th Tactical Fighter Group officially activated its first F-16 squadron in a recent ceremony at the unit's base in Wichita.

The 184th TFG is the seventh Air National Guard unit to receive the F-16. Wichita is scheduled to be the largest F-16 base in the Air National Guard, with three squadrons and more than 50 aircraft by 1993.

The initial squadron, the 161st Tactical Fighter Training Squadron, is receiving 18 F-16s to replace F-4Ds. The 177th TFG and 127th Tactical Fighter Squadron will receive F-16s in the future.

Wichita is the primary F-4D combat crew training unit for the Air National Guard and Air Force Reserve. When the base completes its conversion to Fighting Falcons, it will be a major F-16 training site for reserve-force aircrews.

The 184th TFG flies from McConnell AFB, which is adjacent to a Cessna facility. Many Cessna employees are members of the unit.

The F-16 activation ceremony was held on the day of the 184th TFG's annual open house, which also marked the unit's 41st anniversary. Kansas Gov. Michael Hayden was a speaker at the ceremony, as was Maj. Gen. Philip Findley, Adjutant General of the Kansas Air National Guard.

The ceremony included fly-bys of F-4D and F-16 aircraft.



F-16 of the Kansas Air National Guard's 184th TFG, the "Jayhawks," Flying Over Wichita, Kan.

F-16 Units from U.S. Air Force Dominate Two Bombing Competitions

U.S. Air Force pilots flying F-16 Fighting Falcons excelled in bombing competitions recently at Zaragoza Air Base, Spain, and at MacDill AFB, Fla.

In Excalibur '87 at Zaragoza AB, F-16 teams from Torrejon AB, Spain, and from Hahn and Ramstein ABs in West Germany finished first, second and third, respectively, out of seven competing teams. They also made a clean sweep by winning all five events: time-on-target, first-run attack, low-angle bomb, low-angle/drag-bomb and strafe.

An F-16 pilot, Capt. Thomas King from Hahn AB, won the Top Gun award at the competition.

At Long Rifle III at MacDill, seven F-16 teams captured the first through fourth and seventh through ninth places out of 17 teams competing. In their order of finish, the F-16 teams were from MacDill, Homestead, Shaw, Hill, Moody, Luke and Nellis AFBs. Pilots flying A-10 aircraft finished fifth and sixth.

F-16 pilots won the four bombing events in the competition, and Capt. Joseph Hedrick of the 388th Tactical

Fighter Wing, Hill AFB, Utah, won the Top Gun award.

Excalibur '87 and Long Rifle III were one-day events involving randomly selected pilots. Competing aircraft included F-16s, F-111s, F-4s and A-10s.

F-16s have dominated the seven major competitions in which they have flown: the Royal Air Force bombing competition in 1981; the USAF's Gunsmoke events in '83 and '85; Long Rifle I, II and III and Excalibur '87.

Cost Competitiveness Gets a Boost with Convair Energy Plant

By Julie C. Andrews

In its service to Convair's extensive manufacturing operations, the division's three-year-old cogeneration plant in San Diego is producing impressive savings on utility costs, giving the company a boost on its cost-competitive effort.

Cogeneration — the simultaneous production of electricity and steam from a single energy source — has also provided a more dependable and better quality source of power because it reduces peak energy demands and energy fluctuations.

The Convair plant, built at a cost of \$4.1 million, paid for itself in 1986, 11 days ahead of the two-year targeted date. The cumulative cost savings from cogeneration since the plant came on line in September 1984 have topped \$5.7 million.

"To date, the cogeneration plant is operating with more than 98.5 percent uptime," said Kenneth S. Lake, Convair Vice President of Operations, "providing a dependable and economical backup power source for our factory operations. In nearly three years of operation, the plant has proved that cogeneration was the right solution for our goal of reducing energy costs at Convair."

Convair has had a strong energy conservation program for more than 25 years in an area where energy rates are among the highest in the nation. However, in the early 1980s a new solution was needed to reduce the high cost of utilities. That solution was cogeneration.

Before cogeneration, Convair purchased all its electricity and the natural gas to fire steam boilers from local utilities. Today, the purchased gas is used in the cogeneration plant to produce 35 percent of the electricity and 100 percent of the steam required at the San Diego Lindbergh Field plant — the largest of Convair's manufacturing facilities.

A gas turbine drives a generator that produces 2.7 megawatts of electricity. The 900-degree-Fahrenheit turbine exhaust is then recaptured and channeled through a waste heat boiler to produce steam. This steam supplies all the factory requirements to run absorption air conditioning systems, chemical processing systems, steam bonding presses, water heaters and space heaters.

If demand for steam increases, a gas-fired duct burner in the exhaust system increases exhaust heat to 1,600 degrees to provide additional steam.

"In cogeneration, the technology itself is not complicated," said James G. Macoubray, who as Convair's Energy Conservation Administrator began putting together the concepts and feasibility studies for cogeneration in 1981. The complexities of cogeneration, said Macoubray,

are in explaining and selling the economic scenarios and developing the necessary relationships with government-regulated public utilities.

Robert I. Helt, Engineering Specialist, produces a monthly summary of cost savings by evaluating data taken from Convair's utility bill. The economics of the cogeneration plant are closely tracked by Helt. "Our cogeneration control center is linked to the utility's control center," said Helt. "Convair's electric bill shows the generator output every 15 minutes."

Monthly savings are computed on several data points, Helt said, including the savings on purchased electricity, particularly for peak time use. (In San Diego the peak time cost rises from 5 cents per kilowatt hour to 13 cents

per kilowatt hour.) Savings also result from using the free steam that is the byproduct of cogeneration and from economic fuel purchases.

Convair's cogeneration plant was the first to be put into operation in the corporation. Later this year, Data Systems Division-Western Center will bring on-line a cogeneration plant at the Kearny Mesa facility in San Diego. When that plant begins operation, the total electrical power generated by General Dynamics in San Diego will be 6.3 megawatts, with a capability of generating 100 million BTUs per hour of free recoverable heat, according to Helt.

"It's the equivalent of enough power to run 8,500 homes," he said.



Convair's Cogeneration Plant at Night



WE COULDN'T MAKE
IT EASY FOR HIM TO REACH
THE FINISH LINE.
JUST THE STARTING LINE.

It isn't easy for many Special Olympians to run 100 yards. Much less fly 1,000 miles.

They have the spirit, the dedication, and the will needed for running. But flying takes something mentally retarded people may be short of. Money.

That's why this year some 130 companies donated their Cessna Citation jets and pilots for the Citation Special Olympics Airlift.

The airlift, organized by our Cessna Aircraft Company, flew more than 900 Special Olympians and

their coaches from 12 states to South Bend, Indiana, to compete in the Seventh International Summer Games. The Special Olympians competed there for a full week.

Then the airlift fleet of Citations returned to pick them up and fly them home.

A Cessna Citation jet takes off on a business mission every minute of every day. That's testimony to the quality of our jets.

But 130 companies decided to set aside business missions in favor of one that is more important. Special Olympics.

And we think that's testimony to the quality of our customers.

GENERAL DYNAMICS
A Strong Company For A Strong Country

GENERAL DYNAMICS World

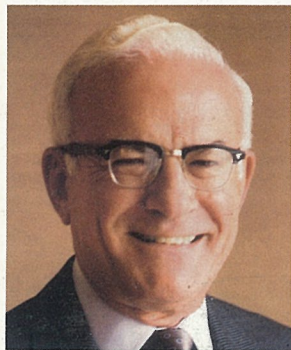
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Company Ad on Page 8

Another in a series of advertisements the company is currently running in major newspapers and national magazines is displayed on Page 8 of this issue.

Bernard W. Rogers, Retired USA General, Elected to Board

General Bernard W. Rogers, who retired from the Army in June 1987 after serving as Supreme Allied Commander-Europe and Commander-in-Chief, U.S. European Command, has been elected to the General Dynamics Board of Directors.



Bernard Rogers

"General Rogers is widely recognized as a soldier-statesman," said Stanley C. Pace, Chairman and Chief Executive Officer. "He has had an exceptionally distinguished military career during which he won the esteem of our allies. We feel most fortunate that we will have the benefit of his broad experience and knowledge as a member of our board."

Prior to being named Supreme Allied Commander-Europe in 1979, Rogers had served in other key posts including Chief of Staff U.S. Army, Commanding General U.S. Army Forces Command and Deputy Chief of Staff for Personnel, Headquarters Department of the Army.

A 1943 honors graduate of the United States Military Academy, he also served as Commandant of Cadets at West Point from 1967-69. He was a Rhodes scholar at Oxford University in England where he received bachelor's and master's degrees in philosophy, politics and economics.

During the Korean War, Rogers commanded a bat-

(Continued on Page 3)

Distribution Begun For Updated Ethics Standards

By Julie C. Andrews

Distribution of the Ethics Standards Second Edition has begun throughout the company.

Based on questions and suggestions from employees and feedback from ethics awareness workshops, the standards have been updated to strengthen and clarify the guidelines under which the company does business. Two new standards have also been added to the booklet.

In the next five months, all employees will have the opportunity to meet with their supervisors to review the changes to the ethics standards. These meetings, during which the new booklet will be distributed, will be completed in March.

In the introduction to the Second Edition, Chairman Stanley C. Pace said: "The standards remain unchanged in substance except for some points of clarification in meaning, the addition of two new standards and the modification of one other. Some standards involve all or most employees of General Dynamics. Other standards likely involve only some employees. All standards, however, are important to administrative excellence."

Some of the changes to the ethics standards are minor and involve simple corrections of inaccuracies in the first booklet. For example, "Industrial Relations" has been changed to "Human Resources." Small design changes are meant to call attention to the second edition and to emphasize the continuity of the program.

The two new standards are Safety and Health and Proper Use of the Ethics Program.

(Continued on Page 2)

Oliver C. Boileau Is Appointed Vice Chairman; Herbert F. Rogers Is Named Company President

The General Dynamics Board of Directors on Nov. 4th appointed Oliver C. Boileau to serve as Vice Chairman until his retirement in 1988 and Herbert F. Rogers to serve as President and Chief Operating Officer of the corporation. Both appointments are effective January 1, 1988.

Boileau, 60, has served as President of General Dynamics since 1980. He formerly was a Vice President of The Boeing Company. Rogers, 62, has served as Executive Vice President-Aerospace of General Dynamics since January 1987. He formerly was Vice President and General Manager of the Fort Worth Division.

"These actions are in support of our previously announced objective of providing for an orderly transition of management responsibilities and in response to Mr. Boileau's request to retire," said Stanley C. Pace, Chairman and Chief Executive Officer.

"As Vice Chairman, Ollie Boileau will carry out a number of program and operational assignments until his retirement at the end of April," Pace said. "He has served General Dynamics with distinction and dedication over the past eight years."



Oliver Boileau



Herbert Rogers

"Herb Rogers has demonstrated his strong leadership, management and technical skills during a 38-year career with General Dynamics," Pace said. "He will be able to put these skills to full use as President and Chief Operating Officer."

(Continued on Page 3)



F-16N Aircraft with Soviet-Style Markings Sported by the Navy's Adversary Fighters

Adversary Squadron at NAS Key West, Fla., Receives Its First F-16N Fighting Falcon

The U.S. Navy's 45th Fleet Adversary Squadron, VF-45, welcomed the F-16N Fighting Falcon to the Navy's East Coast aircrew training operations in a recent ceremony at Key West Naval Air Station, Fla.

The unit's first F-16N was piped aboard with a bosun's whistle following speeches by Navy officers and an air show flown in the aircraft by Fort Worth's David F. Palmer, who is a commander in the Navy Reserve.

VF-45 is the East Coast counterpart of the Navy's "Top Gun" air combat maneuvering training school and VF-126 at NAS Miramar, Calif. VF-45's instructor pilots will fly their F-16Ns in mock air battles against Navy fighter and strike fighter aircrews, simulating tactics used by Soviet fighter pilots.

"Through the use of this product, we'll produce a better product — the U.S. Navy fighter team that flies the F-14 and F-18," said Vice Adm. Richard M. Dunleavy, Commander of the U.S. Atlantic Fleet's Naval Air Force.

Admiral Dunleavy noted that adversary pilots at Top Gun and VF-126, who received their first F-16Ns in early summer, continue to "rave" about the aircraft as they log more F-16 flight hours.

Rear Adm. Henri B. Chase, Commander of the strike fighter component of the Atlantic Fleet, said the F-16N brings supersonic adversary capability to VF-45 for the first time. The unit had previously flown only the subsonic A-4 as an adversary fighter.

The new airplanes will allow the unit to simulate advanced tactics used by pilots of fourth-generation threat aircraft like the Su-27, MiG-29 and MiG-31, said Cmdr. John Warren, skipper of VF-45. Commander Warren noted that the unit will accomplish its mission with the assistance of General Dynamics personnel who are main-

(Continued on Page 3)

Japan Picks F-16 Derivative as FS-X Fighter

The Japanese government recently announced that it has selected a derivative of the F-16 to become its new FS-X fighter.

The FS-X aircraft will be Japan's successor to the domestically produced F-1. In announcing the selection, the Japan Defense Agency (JDA) said the new aircraft will primarily fill air defense and air interdiction roles.

General Dynamics acknowledged the announcement with a statement noting that the company is pleased with Japan's decision and "looks forward to working under the guidance of the JDA and with the Japanese aerospace industry, and will make every effort to achieve success as our two countries work together on this most important Japanese program."

David J. Wheaton, Fort Worth Vice President-Marketing, described the program as "a very significant win" for the F-16.

The Fighting Falcon competed with McDonnell Douglas' F/A-18 and F-15 aircraft during the Japanese

evaluation. Japan reportedly was seeking a two-engine aircraft earlier in the program but became receptive to the F-16 because of the aircraft's lower cost and excellent safety record.

The Japanese program will include codevelopment and coproduction. Full details of the arrangement have not been determined.

The FS-X aircraft are to be delivered in the late 1990s. The JDA's announcement included a preliminary configuration outline indicating that the aircraft may be modified to incorporate larger wings, vertical canards below the engine air intake, an improved-thrust engine and other changes, including more composite materials.

Japanese officials announced on Oct. 2nd that Japan would buy a modified version of a U.S.-built aircraft and that the competition field had been narrowed to the F-16 and F-15. The selection of the F-16 was announced less than three weeks later.

The FS-X requirement is for more than 100 aircraft.

First Four F-16s for Turkish Air Force Arrive from Fort Worth Plant

The air force of the Republic of Turkey marked the arrival of its first four F-16 Fighting Falcon aircraft with a ceremony Oct. 20th at Murted Air Base near Ankara.

Turkish Prime Minister Turgut Ozal, Chief of Turkish General Staff Necip Torumtay, Minister of Defense Zeki Yavuzturk, U.S. Ambassador Robert Strausz-Hupe, U.S. Air Force General Alfred G. Hansen and many other Turkish and U.S. government and air force officials were among dignitaries who witnessed the activation of the country's first F-16 operating base.

General Dynamics was represented at the base activation ceremony by Charles A. Anderson, Vice President and Fort Worth General Manager. Anderson said the beginning of F-16 operations in Turkey and the production milestones reached by TUSAS AEROSPACE INDUSTRIES (TAI) signify the realization, after many years, of Kemal Ataturk's goal of establishing a modern aircraft industry in the country. Ataturk was the founder of modern Turkey.

The four F-16D two-seat aircraft were produced at the General Dynamics factory in Fort Worth and flown to Turkey by Turkish and U.S. Air Force pilots. Four more Turkish F-16s will be delivered from the Fort Worth plant in January 1988, while the remainder of the country's order of 160 will be produced by TAI in Turkey.

The arrival ceremony had added significance because a fifth aircraft displayed at the event, a single-seat F-16C, is the first of the 152 that will be delivered from the TAI factory at Murted. The TAI facility is situated across the runway from Murted Air Base on a site that was a wheat field only 3½ years ago.

Arrival of the first airplanes is the latest in a series of milestones since Turkey announced its decision to purchase F-16s in December 1983.

In May 1984, TAI was formed in a joint venture as the first step toward establishing a modern aircraft industry in Turkey. Groundbreaking for construction of the Murted factory took place in October 1984, and the major sections of the first F-16 to be produced in Turkey were joined at the factory in February 1987.

The first Turkish-produced airplane was rolled from the factory to the fuel and calibration stations in September and made successful test flights on Oct. 11th and on Oct. 13th.

An extensive training program for Turkish employees who will work at TAI has been under way since August 1985. By 1989, more than 300 Turkish nationals will have been trained by General Dynamics in the United States. More than 500 additional employees will be trained at TAI.

TAI has more than 800 employees. As Turkish F-16 production continues, employment at the plant is expected to approach 2,000 in 1990.

All production events at TAI have occurred according to schedule, leading to a planned delivery of the first TAI-produced F-16 to the Turkish Air Force in January 1988. In addition to that aircraft, which was displayed at the Oct. 20th ceremony, the company has nine others in various stages of final assembly in its 700,000-square-foot factory.

At Murted Air Base, F-16s are replacing F-104 aircraft that have been in service for more than 20 years. The two aircraft types will be operated together at the base during

the transition period.

Six Turkish Air Force pilots have received F-16 flight training at Luke AFB, Ariz. Murted Air Base will be the initial F-16 training site in Turkey. The country will eventually have four F-16 bases.

Turkey is the fifth nation to receive advanced F-16C/D Fighting Falcons. More than 1,900 F-16s have been delivered to the air forces of 12 nations, and the aircraft has logged more than 1.6 million flight hours worldwide since the first F-16 went into service with the U.S. Air Force in 1979.

While two factories in Europe have produced F-16A/B Fighting Falcons, TAI is the first company besides General Dynamics to produce F-16C/D aircraft. The first F-16C/D models were delivered to the U.S. Air Force in 1984.

Turkish Air Force F-16s are powered by the General Electric F110-GE-200 engine. The engine is being manufactured by TUSAS Engine Industries (TEI) in Eskisehir, Turkey.



Turkish Air Force F-16s on the Murted Air Base Flight Line During Arrival Ceremony

Distribution of Second Edition of Ethics Standards Begun Companywide

(Continued from Page 1)

Safety and Health is similar to the standard on environmental actions and states: "As a company and as individual employees we are responsible for maintaining a safe and healthful work environment. We must comply fully with all federal, state and local health and safety laws and regulations."

The second new standard, Proper Use of the Ethics Program, is designed to guard against possible abuse of the program, particularly if employees attempt to harm or slander another employee through false accusations. It also specifically prohibits reprisal by other employees, including management against an employee who exercises responsibility for upholding the standards.

The modified standard is Suppliers and Consultants, which now permits an employee to accept unsolicited promotional items from a supplier as long as acceptance

does not constitute a conflict of interest in either appearance or fact. The item must be clearly promotional in nature, mass produced, trivial in value and not intended to evoke any form of reciprocation. This change brings the standard into conformity with the Corporate Policy and Procedure (CPP) on this subject.

Other changes may be found in the preface matter to the standards. This section contains Our Mission, Our Commitments, Our Values and Our Responsibilities. Changes in the order of the commitments, for example, address a concern that the order in the first edition signified priority. A sentence has also been added that describes the commitments as broad ideals, not contractual statements as some interpreted the first edition commitments.

The section on responsibilities has been clarified and enlarged so that the company, supervisors and employees have clearer statements of what is expected of them in carrying out the ethics standards. Supervisors have a

special responsibility for implementing the standards and maintaining a workplace "free of the fear of reprisal concerning the upholding of the standards." A change in wording clarifies an employee's responsibility in approaching a fellow employee who may be in danger of violating the standards and in reporting violations when they occur.

The closing portions of the booklet are essentially unchanged. A Help and Information section explains whom to seek in resolving questions about ethics and conduct. An additional section on the inside back cover describes the relationships between the ethics standards, the CPPs and division and subsidiary standard practices.

All of the changes will be covered in the employee/supervisor meetings in the next five months. After receiving the Second Edition booklet, employees will be asked to sign an acknowledgement card that signifies they have received the standards, have had the opportunity to read them and understand they are company policy.

Third Quarter Earnings Increased 12 Percent; Earnings for Nine Months Were Up 25 Percent

The company announced on Oct. 21st that net earnings for the third quarter of 1987 were \$111.5 million, or \$2.62 per share, up from \$100.0 million, or \$2.34 per share, a year ago. For the first nine months, earnings were \$342.0 million, or \$7.99 per share, compared to \$273.6 million, or \$6.41 per share for 1986.

Third quarter earnings were approximately 12 percent higher than those of a year earlier, while earnings for the first nine months were approximately 25 percent above those in the comparable period of 1986.

Sales were \$2.3 billion for the third quarter and \$6.9 billion for the nine months, compared to \$2.2 billion and \$6.5 billion a year earlier. The company's funded backlog at the end of the third quarter stood at \$15.2 billion and total backlog (funded and unfunded) reached \$22.9 billion. Comparable amounts in 1986 were \$16.8 billion and \$23.2 billion.

"Income gains reflect the improvement in Cessna Aircraft Company's operating performance compared with

the third quarter and first nine months last year," said Stanley C. Pace, Chairman and Chief Executive Officer. "And, as in previous quarters of 1987, net earnings benefited from a lower income tax rate, including the gain from liquidation of deferred taxes."

"Our ongoing Government Aerospace business improved compared to the third quarter a year ago," Pace said. "This improvement, however, was more than offset by increased investments we are making for new programs in defense. We are making these investments selectively, choosing programs for which the Department of Defense has firm requirements and for which we have the basic technologies."

"Similarly, expenditures committed to development of a new vehicle reduced profits at the company's Land Systems Division. Our submarine profits continue to be less than last year's due to increased costs on the SSN 688 program."

Camden Operations Wins Navy Contract For Test Equipment

Pomona's Camden Operations has been awarded a \$13 million contract to build test equipment for the Sparrow missile.

General Dynamics was awarded the firm fixed-priced contract over two other competing contractors, the Naval Air Systems Command in Washington, D.C., announced.

The equipment is designed to test circuit card assemblies in the AIM/RIM 7-M Sparrow missile. It will be installed at the Navy's Depot at Alameda, Calif.

Charles M. Johnston, chief of the Test Equipment Engineering Department at Camden, said the concept for the test system is new, although much of the hardware is similar to that used in production acceptance testing. Johnston said the division had bid on test equipment before, but this award represents a significant win in the "first head-to-head competition" between the Camden Operations and Raytheon.

NAS Key West, Fla., Receives 1st F-16N

(Continued from Page 1)

taining the F-16Ns under contract to the Navy.

"The VF-45 Navy team plus the General Dynamics team will keep these aircraft operationally ready to assist in meeting all of the ever-increasing adversary requirements and to improve overall Atlantic Fleet combat readiness," he said.

Ted S. Webb, Fort Worth Vice President - F-16 Programs, represented General Dynamics at the ceremony. Webb said cooperation between the company and the Navy will be the key to making the contractor maintenance program a success. "We at General Dynamics value our renewed association with the Navy in the aircraft field," Webb said.

Cmdr. Robert "Skip" Nelson is one of two VF-45 pilots who have already completed F-16 training at Luke AFB, Ariz., and at NAS Miramar. "Not until I actually flew this aircraft did I believe what it could do," Commander Nelson said. "In this airplane, finally, you can do everything you ever wanted to do as a fighter pilot. It is strictly a pilot-limited aircraft."

In the flying portion of the ceremony, Palmer performed the same routine that he flew as a company demonstration pilot at the 1987 Paris Air Show, reaching speeds of .95 Mach and pulling 9-g turns. Palmer is a Navy Reserve captain-selectee and has been a company test pilot since 1977.

NAS Key West is the Navy's third F-16N base, the 42nd F-16 base worldwide and the fifth F-16 base in Florida. The Florida F-16 units perform five different missions: adversary fighter at NAS Key West; air defense fighter at Jacksonville Air National Guard Base; aircrew training at MacDill AFB; flight testing at Eglin AFB; and multirole fighter with air-to-ground emphasis at Homestead AFB.

Boileau, Rogers. . .

(Continued from Page 1)

After joining General Dynamics as a design engineer at Fort Worth in 1949, Rogers held aerospace engineering and program management positions with both the Fort Worth and Convair divisions. He received a Bachelor of Science degree in Aeronautical Engineering from Purdue University in 1949, and in 1979 was awarded an honorary Doctor of Engineering degree from Purdue.

Boileau joined Boeing in 1953 after receiving Bachelor and Master of Science degrees in Electrical Engineering from the University of Pennsylvania. He later was a Sloan Fellow at the Massachusetts Institute of Technology, where he received a Master of Science degree in Industrial Management in 1964. After joining Boeing as an electrical engineer, Boileau progressed through many technical and management positions of increasing responsibility. He was appointed President of Boeing Aerospace Company, a subsidiary of The Boeing Company, in 1973.

Elected to Board . . .

(Continued from Page 1)

talion. He was an assistant division commander in Vietnam.

Rogers is a recognized scholar and built a reputation as one of the Army's most progressive leaders. He has been widely applauded for reforms directed at making army training more meaningful for the common soldier and toward improving communications between officers and enlisted personnel.

"In the interest of clear communication with all General Dynamics employees, I would like them to know that General Rogers' service on our board has been reviewed by the Judge Advocate General of the U.S. Army and no conflict of interest was found," Pace said.

"Further, his service on the board was reviewed for compliance with our company's even more restrictive guidelines regarding former government employees, and no conflict was found," Pace said.

"A key element in making these determinations was the fact that for the eight years prior to his retirement General Rogers served as Supreme Allied Commander-Europe, an operational command," Pace said. "As a result, it could be readily demonstrated that he met the government and company requirement of 'not having personally participated in a procurement or contract administration matter affecting the company's financial interests during his last two years of government service.'"

Companywide Employee Survey Reports

Compiled by Sue L. Shike

Decision-Making, Management Style Receive Special Attention in Survey Action Plans

Company executives have taken positive steps to address the problems reported by employees regarding decision-making and management style.

In the special survey edition of *General Dynamics World* published in July, decision-making and management style were two areas suggested for improvement in corporatewide survey action plans.

During the 2nd Quarter Performance Reviews, Chairman Stanley C. Pace outlined his views on how the companywide "matrix" organization approach operates and why he has concluded it is the most effective for our business. He pointed out the similarities between the needed program management organizations within the divisions and the overall Corporate approach.

Feedback from sessions at the divisions suggested there were difficulties in coordination between divisions and corporate staff functions.

Pace reviewed the role of the corporate staff functions in providing guidance and help to the divisions in their achievement of division operating plans. He

acknowledged the "natural" tension that comes when people work within a matrix organizational structure, but he concluded the balancing of line and staff roles is good for an organization as diverse in products, programs and technology as the company is.

Pace acknowledged that coordination between functions can always be improved and described steps he has taken at the Corporate Office, such as his staff meetings designed to improve coordination. Discussions at the Quarterly Performance Review have been expanded to include special presentations about corporatewide initiatives that are designed to provide for better integration of such initiatives. The discussion of the Materials Requirement Planning (MRP) initiative at the last meeting is an example.

Pace asked the executives help to waterfall the discussions at the Performance Review down through their organizations and divisions, as well as future presentations at the Quarterly Reviews about corporatewide initiatives.

* * *

Divisions Will Be Given 'Whys' on CPPs

As part of a modified Corporate Directives process, corporate officers will be responsible for providing feedback to division General Managers or subsidiary Presidents regarding their comments which were not included in Corporate Policies and Procedures (CPPs) being developed or revised.

This change is in response to concerns expressed about the development and issuance of CPPs. This change, along with others, will be incorporated into CPP 1-101, "General Dynamics Directives Process," which is planned for reissue this month.

* * *

Better Planning — More Div. Participation

In response to a survey suggestion, division goals developed in July will form the basis of the Data Systems Division 1988 Operating Plan currently being developed. Several of these goals reflect support of other divisions on specific projects.

Earlier integration is designed to improve the planning cycle for Data Systems Division and service to the divisions.

Division and corporate planners and corporate functional representatives have also worked during 1987 to further streamline and improve the operating plans. A major accomplishment is the integration of previously independent functional planning efforts such as GD 2000 and the Long-Range Facilities Plan into the Operating Plan. In addition, the 1988 Operating Plan is structured to reflect more closely the divisions' plans for achieving their goals.

To reduce Operating Plan preparation time and costs, divisions have been provided with disks containing exhibit formats, eliminating the need for each

division to create its own exhibit formats. In 1988, the current quarterly performance review computerized reporting system will be upgraded to accomplish additional time and cost savings.

Division input on 1988 Operating Plan goals was received in July and was reflected in the goals that were distributed in late August. The Corporate Office and the divisions continue to work together to refine these goals as appropriate prior to finalization of the division Operating Plans. The divisions have been directed to flow the goals down through their organization to ensure understanding of and commitment to the goals at all levels of their organization.

A Corporate Strategic Plan has been drafted and is under review by the Executive Office. An initial draft of the Corporate Strategic Technology Plan has been prepared and is now being reviewed and revised. Flow-down to division Technology Plans is expected to occur in early 1988.

* * *

Pomona Division Strives to Improve Interdepartmental Communications

One of the clear messages in the results of the employee survey was that communication between employees, work groups and departments can be improved. At Pomona, part of the ongoing effort to improve communications and to impact cost competitiveness is the establishment of "Quality Feedback." This is a practical and results-oriented approach to opening up two-way communications about quality related concerns.

"Quality Feedback" involves the people who know the job best — the person who actually does the work — in identifying day-to-day issues.

All members of a work group are involved, along with relevant support personnel. In the Production area, for example, Methods Engineering, Quality, and Production Control people are regular members. Group members are asked for things that are keeping them from "doing things right the first time." These

items are recorded and, if appropriate, the supervisor, support person or group member will then give any immediate feedback on the identified items.

The supervisor provides the group feedback from performance or quality measure for their group. In Production, this may be Statistical Process Control data and inspection reports. The supervisor also reports on actions taken on items raised in previous meeting and discussion of remaining open items.

Currently "Quality Feedback" is being used in several Production departments and the Human Resources department. Results to date include improved lighting for microscopes in Integrated Circuit Film Fabrication, a tool holder in Metal Fabrication and computer system instruction in Human Resources.

Initial training in "Quality Feedback" is conducted by Pomona's Human Resource Development Group.

Gunsmoke Competition Dominated by F-16 Teams and Pilots

U.S. Air Force teams and pilots flying Fort Worth-built F-16s dominated the service's 1987 Gunsmoke competition, thus continuing the tradition established by F-16 teams that excelled in the 1983 and 1985 biennial Gunsmoke meets.

This year's competition included teams flying A-7, A-10 and F-4 aircraft. It was held in October at Nellis AFB, Nev.

F-16 teams captured six of the top eight positions, including first, second, third, fifth, seventh and eighth in combined scoring. The teams, in their respective positions, were from the 388th Tactical Fighter Wing, Hill AFB, Utah; the Air Force Reserve's 419th TFW, Hill AFB; the 401st TFW, Torrejon Air Base, Spain; the 31st TFW, Homestead AFB, Fla.; the 8th TFW, Kunsan AB, South Korea; and the 169th Tactical Fighter Group, McEntire Air National Guard Base, S.C. Fourth and sixth places were won by A-7 units.

F-16 pilots won three of the competition's six individual events, 30-degree dive bombing, 20-degree low angle drag bombing and navigation/attack. The Top Gun award in the overall competition went to Lt. Col. Danny Hamilton, an F-16 pilot from the 419th TFW.

All of the Fighting Falcons flown in the competition were F-16As. At least two of the six F-16 teams will be flying F-16Cs in the next Gunsmoke meet set for 1989.

Savings and Stock Investment Plans

	Annual Rate of Return for the 12 Month Period Ending:		
	Sept. 1985	Sept. 1986	Sept. 1987
Salaried			
Government Bonds	14.8%	13.4%	4.7%
Diversified Portfolio	18.0%	36.1%	47.3%
Fixed Income	12.4%	12.0%	11.7%
Hourly			
Government Bonds	14.8%	12.8%	4.9%
Diversified Portfolio	17.3%	37.2%	49.4%
Fixed Income	12.4%	12.1%	11.8%
GD Stock Closing Price	\$60.75	\$71.37	\$69.50

Fort Worth Marks Its First Fabrication Of Greek F-16 Parts

A "first chip" ceremony was held at Fort Worth recently to mark the beginning of parts fabrication for the first F-16 to be delivered to Greece.

Lt. Col. Christos Konstantinidis, Senior National Representative of the Hellenic Air Force (HAF), Lt. Col. Pat Snell, U.S. Air Force Plant Representative Office (AFPRO) Foreign Military Sales program manager, and members of Fort Worth's F-16 Greece program staff were among those present.

The first HAF aircraft, an F-16D, is scheduled to be delivered in October 1988. Thirty-nine additional aircraft will be delivered by October 1989.

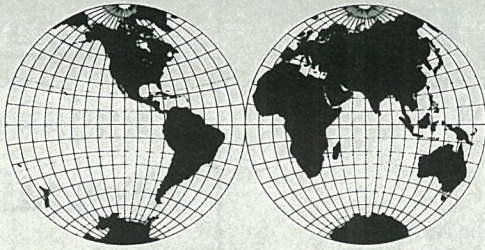
The Greek F-16 program is the only F-16 program for a foreign country that is being handled as a direct sale from General Dynamics to the country, rather than through the U.S. Government, according to Vernon A. Lee, F-16 Greece Program Director. The program includes coproduction by Hellenic Aerospace Industries, which will manufacture a total of 485 air inlets and 230 aft fuselages.

World

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Manager of Internal Communication: Edward D. Williams

Contributors: Julie Andrews, Larry Elwell, Graham Gavert, Jim Gilkerson, Don Gilleland, Dean Humphrey, Jack Isabel, Dave Lange, Jerry Littman, Jack Price, Tom Rule, Chris Schildz, Joe Stout, Joe Thornton



Around the World

CHQ: Julius C. Jimeno joined as Corporate Manager of Safety and Health for Special Projects . . . Jana L. Jones was promoted to Senior Corporate Financial Analyst . . . Ardelle C. St. George to Corporate Attorney . . . Joni L. Boutelle and Carl E. Geyer Jr. to Internal Audit Chief . . . Janice M. Greene to Internal Audit Manager-West Coast Offices.

Fort Worth: Robert B. Lillie was appointed to Director of Special Projects Business Management . . . David F. Palmer to Program Director . . . Marvin W. Bahnman was promoted to F-16 Planning and Controls Chief . . . Harry Bakker to Material Program Administrator . . . Jimmie E. Baldwin to Tool Design General Supervisor . . . Michael G. Barbolla to Analytical Associate Engineer . . . Daniel A. Burgoyne to Inspection General Supervisor . . . Robert L. Craft and Andrew C. Spear to Assistant Project Engineer . . . Harvey J. Durham to ATF Planning and Controls Manager . . . Buddy F. Faries to Senior Manufacturing Engineering Specialist . . . James E. Finley to Senior Quality Control Engineer . . . Thomas S. Godfrey to Logistics Group Engineer . . . Bernice D. Griffin to Inspection Supervisor . . . Edwin G. Hardy Jr. to Field Service Engineer . . . Vicki R. Harvick to Technical Training Specialist . . . Gregory W. Henderson to Project Engineer . . . Robert W. Jackson, Joseph G. Redinger and Donnell H. Wheat to Material Planning Chief . . . Mitchell L. Kaarlela to Configuration Control Specialist . . . Billy J. Leeper to Engineering Chief . . . William J. Loomis to Procurement Manager . . . John S. Miller to Administrative Services Chief . . . Dennis L. Modisett to Material Program Administrator . . . Robert L. Norment to Estimating Project Specialist . . . Randle J. Phipps to Manufacturing Support Equipment Engineering Specialist . . . Edward F. Renner to Electronic Products Programs Manager . . . Gary C. Stephens to General Foreman . . . Thomas J. Summers to Human Resources Administrator . . . Bryan D. Taylor to Foreman . . . George L. Thrasher to Material Control Chief . . . Roy L. Trotter to Tooling Supervisor . . . Anthony A. White to Manufacturing Control General Supervisor.

Electric Boat: James M. McCormack and John W. Morse were promoted to Assistant Superintendent . . . William F. Potter to Engineering Chief . . . Alvin G. Kinsall to Area Manager . . . David A. Elford to Engineering Supervisor . . . William E. Kirby to Nuclear Test Supervisor . . . John J. Zawaski to Senior Education Services Supervisor . . . Gordon O. Rose to Education Services Supervisor . . . Whitney C. Teehan to Senior Design Supervisor . . . Louie R. Williams to Design Supervisor . . . Robert R. Smelings to Quality Assurance Supervisor . . . Ronald J. Maggi to Inventory Control Supervisor . . . Kelly B. Frederickson to Records Section Supervisor . . . Pasquale F. DeBernardo to Project Control Supervisor . . . Thomas M. Gauvin to General Foreman . . . Larry R. Thomas to Foreman-Rad Audit . . . Daniel R. Dragoo, Joyce E. Marshall, Nancy T. Medina, Thomas Royer and Roland J. St. Jean to Foreman . . . Mark Stanley to Assistant Chief Nuclear Test Engineer . . . Thomas F. Wolverton to Test Operating Engineer . . . Jeffrey A. Firmin to Plant Protection Lieutenant . . . At Quonset Point, William Sauer to Superintendent . . . Peter Ladd to Operations Manager . . . Bruce A. Seid and Michael P. Theriault to Foreman III . . . David R. Dekeulenaere, Maurice E. Peltier and Steven J. Schaeffer to Foreman II . . . Robert Giles to Group Trade Planner . . . At Newport, Richard A. Boyd to Engineering Chief . . . At Idaho, Edward E. Damien to Ship Manager . . . Frederick W. Shay to Records Section Supervisor . . . At Kesselring, Michael R. Dudley to Equipment Control Superintendent . . . Robert F. Coniglio to Engineering Supervisor.

Convair: Jeffrey A. McKeel was appointed to Marketing Director . . . James Bunnell was promoted to Program Manager . . . Michael J. Paesani to Manufacturing Operations General Supervisor . . . Stephen Gates Jr. to Senior Project Engineer . . . Donald A. Uhlir to Engineering Specialist.

Space Systems: Howard M. Bonesteel was appointed to NASA Atlas/Centaur Extensions Director . . . Troy D. Shook was promoted to Production Manager . . . Craig A. Fitz Gibbon to Program Manager . . . Terry R. Banderas to Publications Chief . . . John N. Coulson to Industrial Engineering Chief . . . John C. Nelson to Quality Assurance Chief . . . Kenneth A. Vaught to Engineering Chief . . . Ned L. Cross and Robert R. Henry to Senior Engineering Specialist . . . Robert F. Hild to Engineering Specialist.

Electronics: Oscar P. Liebreich was promoted to Facilities Manager . . . Hector Gonzales to Senior Administrative Financial Analyst . . . Richard K. Murdoch to Senior Contracts Administrator . . . David C. Ashton to Operations Test Engineer . . . Mark R. Hoffman and Gary K. Krantz to Senior Cost Estimator . . . Herman B. Ruiz to Associate Engineer.

Land Systems: John F. Barich was promoted to Skilled Trades Maintenance Foreman . . . George A. Stathopoulos to Scranton Plant Manager . . . James M. Yeats to Program Administrator . . . Michael G. Kendig to Financial Analysis Chief.

Pomona: Robert K. Brownell, Raymond R. Ranney and Gary L. Burgstaler were promoted to Material Control Supervisor . . . Victoria L. Korte to Engineering Planner . . . Mark C. Lange to Engineering Group Supervisor . . . Carol A. Turner to Superintendent . . . Michael H. Robson and Harold S. Williams to Group Engineer . . . Richard C. Hartman to Senior Quality Assurance Specialist . . . Edward D. Roesly to Superintendent/SM Microwave Assembly . . . Duanelyn S. Chu to Senior Configuration and Data Management Analyst . . . Norma R. Gebhardt to Human Resources Administrator . . . At Camden Operations, James F. Godfrey to Quality Director . . . Ed S. McDonald to Sparrow Program Manager . . . Ruby L. De Woody to Human Resources Chief . . . Steven C. Bordelon to Project Representative . . . Thomas E. Rothwell to Manufacturing II Supervisor . . . At Navajo Facility, James L. Hubbard to Product Line Manager.

Valley Systems: Clifford I. Skivington was promoted to Security Manager . . . Rudolf G. Hix to Section Head.

Cessna: Edwin C. Barker was promoted to Purchasing Manager . . . Janet Farney to Purchasing Superintendent.

Data Systems: At Western Center, Stephen O. Shelley was promoted to Chief-CAD/CAM . . . At Central Center, Robert D. Davis and Donald R. Hartsel Jr. to Engineering Software Supervisor.

GDSC: Hubert R. Hayworth was appointed to Harlingen Operations Director . . . Michael Huff was promoted to Egyptian Zone Workshop Program Manager . . . Lester P. Hamblen to Albuquerque Operations Manager . . . Gerald J. Hatfield to Senior Logistics Systems Analyst . . . Anne M. Tokarz to Senior Accounting Analyst . . . Jill R. Didur to Senior Financial Analyst . . . Barton A. Beck, Mark D. Bledsoe, Clarence B. Cavitt, Joey E. Chaney, John C. Davis, Stuart B. Dollard, Richard H. McClintock, Michael L. Stever, Daniel C. Dukes, Robert W. Merrihew and John L. Tuminelli to Senior Aircraft Specialist . . . Glenden D. Terry to Project Manager . . . Willis E. Schenck to Technical Operations Manager . . . Barton P. Crews to Egyptian Programs Support Manager . . . Stephen W. Scott to Program Administration Manager . . . Clifford Bolding to Maintenance/Training Manager . . . Raleigh G. Harkness to Facilities Maintenance Supervisor . . . Joseph Sayyed to Senior Financial Specialist . . . Larry C. Collins transferred from Fort Worth and was promoted to Senior Engineering Specialist . . . Rick P. Dupre transferred from Fort Worth and was promoted to Engineering Specialist . . . William C. Donnelly transferred from Convair and was promoted to GLCM Program Manager . . . Albert W. Bodkin transferred from Pomona-Camden and was appointed Harlingen Operations Finance and Administration Director . . . John E. Sidlinger transferred from Cessna and was promoted to Offsite Finance and Audit Manager.

Echo-Free Chamber Is in Use to Conduct Aircraft Engineering Testing

Fort Worth recently completed construction of an anechoic or echo-free chamber that ranks as the largest of its kind in the Free World.

The hangarlike chamber, which is spacious enough to accommodate an F-111 aircraft with its wings fully extended, will be used to conduct engineering testing in the development of General Dynamics' aircraft and electronic products. The facility will be used primarily for electromagnetic compatibility and safety-of-flight testing, but it also has features that will permit large-scale radar signature testing, said Robert Q. Lee, Fort Worth's Director of Electronic Systems and Laboratories.

"Data acquired from testing an aircraft in the chamber is equal or superior in accuracy to data obtained in actual flight tests. With the secure anechoic chamber, we can obtain such data without betraying the electronic 'signature' of an air vehicle," Lee said. "The chamber brings a significant new capability to Fort Worth and General Dynamics."

The chamber is a free-standing structure that is completely housed within a steel parent building — actually a building inside a building. The interior of the chamber is covered with a polyurethane foamlike material that absorbs microwave energy, giving the chamber its anechoic properties. The absorbent material covers the floor, ceiling and walls and comprises hundreds of two-foot, three-foot, four-foot and six-foot high foam cones.

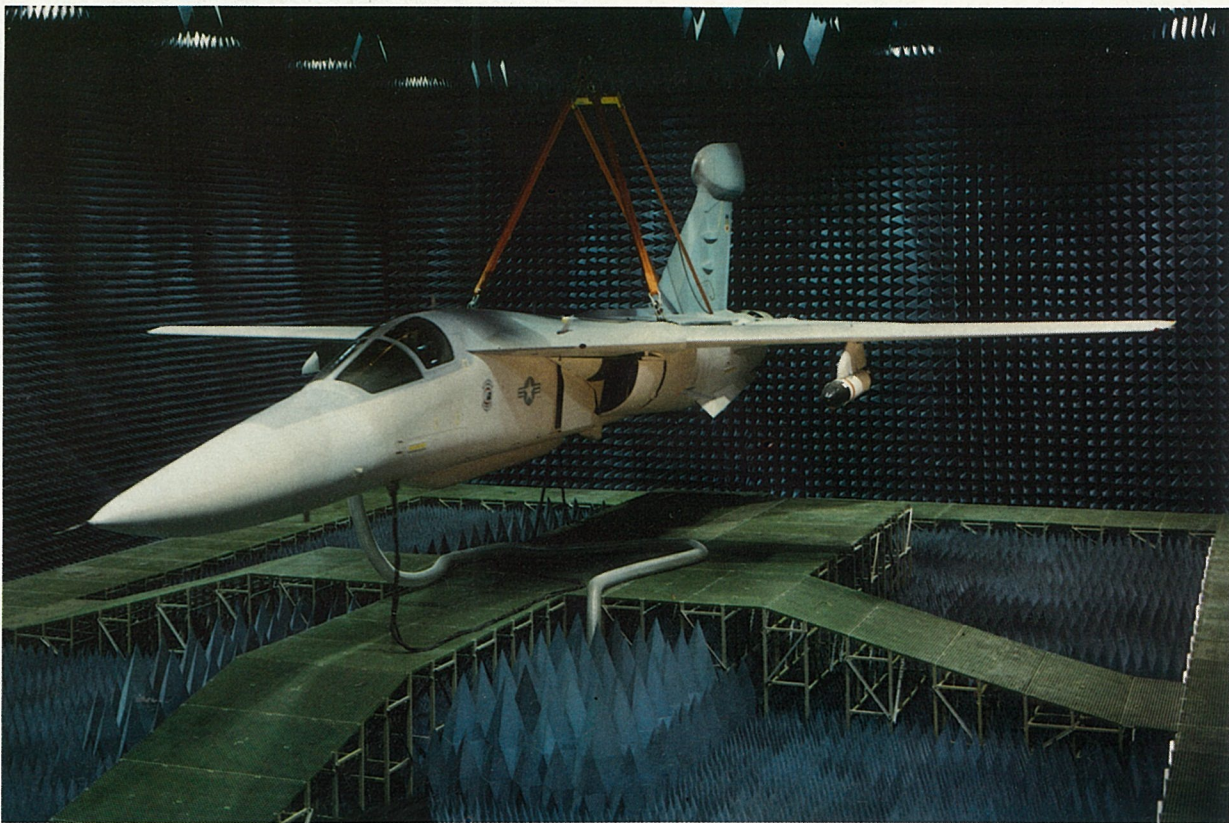
The different-sized cones allow the absorbance of a wide range of signal frequencies, said Curt Holliday, Fort Worth's Project Engineer for the chamber. The arrangement of the cones creates a one-way transmission "quiet zone" near the center of the chamber. The quiet zone will be used in antenna development, radar cross-section measurement and radio frequency transmission testing, Holliday said.

The cones, which were supplied by a subcontractor, are composed of a polyurethane and carbon mixture that absorbs radio frequency energy.

The chamber is 120 feet long, 85 feet wide and 40 feet high. In aircraft testing, the airplane is suspended from the chamber ceiling with an 80,000-pound capacity track-mounted crane. The aircraft is loaded onto the crane outside the chamber, lifted and moved along the track to the testing area inside the chamber.

Airplanes will be suspended from the crane using fabric slings because metal slings or attachments would create unwanted signal reflections, Holliday said.

The chamber includes utility connections so that elec-



New Chamber for Anechoic Testing. View of EF-111 aircraft in Fort Worth's new anechoic chamber shows energy-absorbing polyurethane cones on walls, ceiling and floor of chamber and fiberglass ramps that provide access to the aircraft tested. The lines running from the floor provide cooling air and electrical power to allow full operation of aircraft electronic systems. The aircraft is suspended with a radar-transparent nylon sling.

trical power and cooling air can be supplied to an aircraft under test, as needed for the operation of electronic and hydraulic systems. A fiberglass ramp surrounds the testing area in the chamber, making the aircraft or other test article accessible to technicians. "Even the nuts and bolts of the ramp are fiberglass, so they'll be transparent to radar," Holliday said.

A unique element of the chamber is its anechoic main door, which is 85 feet wide and 40 feet high, weighs 140,000 pounds and takes seven minutes to open. "A special radio-frequency seal, similar to an inflatable gasket, seals the door to the chamber when the door is closed," Holliday said.

Underneath the interior foam cones, the doors, walls, ceiling and floor of the chamber are made of welded-seam

steel to further prevent signal leakage.

A testing control room, office and other support areas are also located within the main building that encloses the chamber structure.

The chamber's radio frequency shielding characteristics meet National Security Agency standards, said Lee. "The physical security of the facility will allow operations for testing that is classified as 'secret,' and also for programs of extreme sensitivity that have additional requirements," he said.

"The chamber was completed in less than a year, which was quite a feat," Lee said. "This was possible because of good and stable engineering specifications and because of the cooperation and hard work of many people, especially in the division's Facilities Department."

Quonset Point Security Guard and His Dog Commended in Search for Lost Boy

By Richard A. Boudreau

Community service by General Dynamics employees comes in many forms. For Michael Beaver, a K-9 officer with the Security Department at Electric Boat's Quonset Point Facility, it involved volunteering his services and those of his highly trained guard dog in the search for a lost boy from Providence, R.I.

The boy became separated from his family while on a Sunday outing at a park in nearby Warwick. Hearing about the missing child, Beaver went to the park with his dog after working the third shift and spent much of that day and the one following in the search.

The search ended tragically, however, when the boy was found drowned in a nearby pond.

In recognition of his efforts, Beaver received letters of commendation from Warwick Mayor Francis X. Flaherty and Warwick Chief of Police John F. Coutcher.

The letter from Mayor Flaherty read:

"On behalf of all the citizens of the City of Warwick, I would like to take this opportunity to thank you for your participation in the efforts to rescue and recover the young boy who drowned at City Park on July 26, 1987.

"Although the incident had a tragic result, it was nonetheless heart-warming to see the way that people such as yourself responded in the effort and gave everything that you had in the hopes that there would be a happier ending to the story.

"Our City is a better place to live because of the efforts of people like yourself and we are deeply grateful for your hard work. Thank you again for your assistance."

The letter from Police Chief Coutcher, written to Quonset Point Facility Manager of Plant Protection James R. Gulluscio, said:

"I would like to take time to thank Michael Beaver, your K-9 officer, who volunteered his services on July 26th and 27th during a major search that was launched in Buttonwoods City Park.

"The time and effort spent by Officer Beaver was certainly a credit to him and your organization, pointing out the fact that in time of need people are responsive.

"I personally thank Officer Beaver for his efforts."



Michael Beaver and His Guard Dog

Space Systems Holds Meeting for Company Competition Advocates

Space Systems was host for the most recent quarterly meeting of Competition Advocates, a group of representatives from eight General Dynamics divisions whose business is primarily with the Department of Defense. The group met to discuss 1988 goals and to share lessons learned.

The Competition Advocacy program began in 1985 to help the company produce the highest quality products, on schedule and at the most competitive prices. Competition Advocates believe that a significant contribution can be made by maximizing competition where it makes good business sense and by ensuring good subcontract management of a select group of outstanding suppliers.

During the meeting kickoff, Joseph W. Simons, Corporate Director of Competition Advocacy, congratulated the group on exceeding 1987 goals before year-end. Goals include percentage of items competed and total dollar savings as a result of competed procurement.

"Corporate performance on percentage of competed items has increased from 39 percent to 54 percent, and 1988 goals will increase over that level as the company continues its emphasis on cost competitiveness," Simons said. Many of the company's customers, including the military services, are setting high competition goals as well, according to Simons.

To meet these goals, competition advocates act as a catalyst in bringing together the program offices, engineering departments and procurement functions to promote competition.

Merle Aleshire, Competition Advocacy Director at Convair, said, "We must all do our part in assuring that we retain competitive alternatives in our procurements. This starts with alternative conceptual design approaches, no exclusive teaming agreements that restrict competition downstream, at least two sources on all released engineering and streamlined procurement practices."

M1A1 Tank in Saudi Arabia Test Outperforms Three Other Competitors

An M1A1 tank built by Land Systems outperformed tanks from three other countries in a competitive demonstration held recently in Saudi Arabia.

The Saudis have not released the demonstration results, but the consistent superiority of the Abrams was affirmed unofficially.

At the request of the Saudi Government, four tanks participated: the Brazilian Osario, the British Challenger, the French AMX-40 and a U.S. M1A1 from the Lima Army Tank Plant.

The Army provided the tank, and a U.S. manufacturer provided the ammunition. Otherwise, the Abrams demonstration was funded by General Dynamics.

During the first phase of the demonstration at Sharurah, deep in the Arabian desert, the tanks showed their mobility and long-range gunnery capabilities in temperatures ranging from 84 to 117 degrees Fahrenheit.

Each day the tanks averaged from 200 to 300 kilometers over the desert. With Saudi Armor Corps soldiers as its crew, the M1A1, operating with hatches open and closed, cruised at top speed across the flat desert and over sand dunes and rocky hills.

"There's only one word to describe the Abrams' performance: superb," said James Biermann, Land Systems Site Manager.

Biermann said the Abrams, unlike the other tanks, encountered no major component or power train failures. "We had track wear," he said. "But that's the same as a Formula I racer having tire wear. We demonstrated the tank's ability to leap a 9-foot ditch, climb a 1.15-meter wall, traverse a 35-degree slope at 35 miles per hour and climb a 60-degree slope with no problem at all."

The mobility exercises at Sharurah culminated in a main gun firing demonstration at extended ranges.

The second phase of the demonstration was held at Khamus Myshat, a resort town 6,000 feet above sea level. There, the tanks engaged in gunnery competition consisting of various firing scenarios.



An M1A1 with a Saudi Crew Proved Its Superiority in Saudi Arabia Competition

"There was no question that the M1A1 was the top gun of the exercise," Biermann said.

The Abrams again displayed its speed, agility and accuracy at a VIP shoot attended by top Saudi Army and government officials. Attending from Land Systems were: A.W. (Bill) Carion, Vice President and M1 Program Director; Carmelo F. Milia, Director of International Marketing; and Michael W. Wynne, Vice President, Marketing.

Carion complimented the Saudi crew members on their

performance and the U.S. Army noncommissioned officers who trained them. He also personally thanked each member of the Land Systems support team in Saudi Arabia "for challenging work performed to perfection."

In addition to Biermann, the Land Systems team was made up of Mohamed M. Abuelroos, Liaison Engineering; William P. Kluge, Field Operations; Richard R. Brotemarkle, International Field Operations; Roy C. Guernsey, Engineering Shop; and Harold Nolan, Technical Training.

Promotions to Vice President Are Announced Throughout the Company

Promotions to Vice President have been announced by General Dynamics Services Company and Electronics and Land Systems divisions.

L. Peter Larson has been appointed Division Vice President of Administration and Controller at General Dynamics Services Company. He has held overall responsibility for finance, accounting, contracts, procurement and facilities for GDSC since his transfer there from Convair Division in January 1987. Larson joined General Dynamics in 1972 at Pomona as a reliability engineer. He has advanced through several positions in the Finance function since 1972 at Data Systems, Quincy and Convair divisions. Larson was Assistant Controller at Convair prior to transferring to the Services Company. He holds a bachelor's degree in electrical engineering from Union

College in Schenectady, N.Y., and a master's degree in operations research from Rensselaer Polytechnic Institute in Troy, N.Y.

Dan E. DaPra has been appointed Division Vice President and Program Director-Command, Control, Communications and Intelligence and Electronic Warfare at Electronics Division. He began his career with General Dynamics at Pomona, where he held assignments in tactical defensive missile systems engineering from 1957 to 1970. In 1970, he moved to Litton Industries in systems engineering management and from 1974 to 1978 was Director of Advanced Programs and Engineering at Rohr Marine, Inc. In 1978, he returned to General Dynamics where he advanced through several engineering management assignments at Convair and Space Systems, includ-

ing positions as Vice President of Engineering at both divisions. DaPra received a Bachelor of Science degree in Electrical Engineering from the University of Southern California in 1958 and a Master of Science degree in Systems Engineering from California State University at Fullerton in 1969.

At Land Systems, **Charles A. Marquardt** was named Vice President-Special Projects, and **James V. Mercurio** was named Vice President-Material.

Marquardt's initial assignment is to head up the division's Overhead Resource Budgeting. He joined Land Systems from Cessna, where he had been serving as Vice President-Strategic Planning and Information Systems. He joined General Dynamics in December 1979 and held key positions in the Financial and Corporate Planning functions at the Corporate Office before going to Cessna. Marquardt earned a Bachelor of Arts degree in Economics from Gettysburg College in 1963. In 1965, he earned a Master of Business Administration degree from the Wharton School, where he majored in marketing.

Mercurio is responsible for the development and use of divisionwide policies and procedures for material acquisition and internal control. He also ensures that related fiscal procedures are established and maintained. He has more than 25 years of production and material experience. Mercurio joined Land Systems from Fort Worth in July 1982 as Manager of Material Operations and subsequently served as Director of General Procurement.



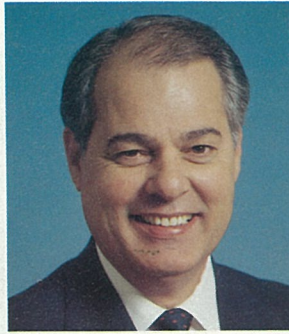
Larson



DaPra



Marquardt



Mercurio

One Division's Wastes Become Another's Fuel

Fort Worth and Continental Cement, a firm partly owned by Material Service Corporation, are cooperating in a program that is effectively turning one division's wastes into another company's fuel.

Continental Cement operates a 622-foot cement kiln near Hannibal, Mo., that has been using waste-derived fuels since November 1986. The facility is permitted to use 21 million gallons of waste-derived fuels per year.

In late 1986, Fort Worth began working with Continental Cement on a program to incorporate paint and other high-energy-value liquid wastes as supplemental fuel at the kiln. After several months of laboratory analysis and study, the division began shipping the materials to Continental Cement for this purpose in August, according to William C. Rosenthal, Fort Worth's Environmental Resources Management program manager.

Fort Worth generates approximately 130,000 gallons of potential fuel blending stock annually. Materials include

paints, oils, jet fuel and mixed flammable liquids.

"The supplemental fuel program has decreased disposal costs at Fort Worth and proven to be an environmentally safe application of resource recovery," Rosenthal said.

Frank C. Stevens, President of Continental Cement, said, "The program is decreasing fuel costs at Continental Cement while meeting all standards for product quality. We completely destroy these waste materials in the process at a temperature of 2,800 degrees Fahrenheit — which is hotter than a blast furnace."

To facilitate the project, Fort Worth has instituted a waste-separation plan using color-coded and labeled drums, said Stephen P. Evanoff, Senior Engineer from the Research and Engineering Department, who is working in the division's Environmental Resources Management group. Evanoff suggested the cooperative program after studying waste-derived fuels and learning of Continental Cement through Material Service Corporation.

Company Is Named One of Four Finalists For Plant Operation

General Dynamics has been selected by the U.S. Department of Energy as one of four finalists in a competition to manage and operate DOE's Mound Plant in Miamisburg, Ohio.

DOE said that the selection of the winner will be made on or before Feb. 1, 1988, with operation of the plant by the new contractor scheduled to start Oct. 1, 1988.

The Mound Plant is a research, development and production facility that manufactures detonators and other small nonradioactive explosive components for nuclear weapons. Monsanto Research Corp., which has operated the plant since 1947, is not seeking renewal of its contract with DOE.

Pete Autio's View of the Company Has Been Through a Lens By Julie C. Andrews

When Penti (Pete) Autio was a boy growing up in Finland, he had an itch to see the world. Little did he realize he would fulfill that wish in part by working for a large corporation in America.

For almost 30 years Autio, a Convair photographer, has packed his camera equipment for trips to locations around the world to capture General Dynamics products operating on land, at sea, in the air or on their way to space.

"I often say that photographers run the world," said Dr. Alan M. Lovelace, Vice President and Space Systems General Manager. "Never in my career have I encountered a photographer who is more of a gentleman or a true professional than Pete."

Autio, who retired recently, recalled some of the challenges of industrial photography, which have often involved painstaking preparation and remote locations. He said one of the most memorable trips he made was in 1975 to photograph the mines of Asbestos Corporation Limited, a then-Canadian subsidiary of General Dynamics. The mines were located 200 miles north of Montreal, near the Arctic Circle.

In 1985, Autio visited Europe to photograph the ground launched cruise missile, the F-16 and the M1 tank, all in operation at various locations. In all, Autio estimates he has visited nearly every General Dynamics division at some time to take photographs for the annual report.

He is no stranger to the element of luck in photography. Autio was aboard a "photo barge" accompanying a submerged submarine scheduled to launch a Convair-built cruise missile.

"We knew the approximate length of the sub and that the missile would emerge a certain distance in front of it," said Autio. Eyeballing the view, he pointed his camera and waited for the countdown. "When the Tomahawk emerged right in the middle of my viewfinder, I was so surprised I almost didn't get the photo," he said. The dramatic, close-up sequence of the Tomahawk broaching the water has been used often.

Underlying the technical skill of Autio's photography is a keen interest in people. He has photographed presidents and politicians, movie stars and sports figures, astronauts and royalty. He has also photographed the not-so-famous.



Convair General Manager John McSweeney Presents Convair Photographer Pete Autio with a Special Memento

On maneuvers with NATO forces in 1985, Autio visited a small Bavarian town, where he had photographed a young woman at the window of a picturesque house in 1955. After inquiring in the village, he was able to locate the same woman and take an identical photo 30 years later.

Autio is also a poet and songwriter. He said that one of his greatest thrills was the day he received life membership in the American Society of Composers, Authors and Publishers (ASCAP).

He has won numerous contests. He has volunteered countless hours of time taking photographs for company and community events outside normal working hours.

Only days after retiring, he volunteered to take photo-

graphs for several ceremonies marking the opening of the St. Vincent de Paul Center in San Diego, a shelter for the homeless. Autio, who left Finland at an early age and wandered the world before becoming an American citizen, has a keen sympathy for the plight of the homeless.

The secret to getting a good photograph, Autio said, is always having your camera with you. Through the years, he has photographed the sights of San Diego. His work can be found throughout the Convair, Space Systems, Electronics and Western Center facilities. Autio divulged another photographic secret: "Beauty is all around you. You just have to know where to look."

Fort Worth's Bill Derby Spends His Weekends in the Middle Ages By Joe Stout

Fort Worth's William A. Derby is like many employees in that he likes to get away from it all on weekends.

He probably manages to get a little further away than most people.

About once a month, Derby spends a day or two in the year 1347. When he goes there, he is no longer Bill Derby. He is William Allen of Monmouth.

Derby is a systems analyst in the Data Systems Requirements section of Fort Worth's Logistics Department. William Allen — when Derby assumes his persona — is "a professional soldier born of Welsh and Scottish parents of lesser nobility," according to Derby.

Derby is active in the Society for Creative Anachronism (SCA), which he describes as an international nonprofit educational and historical association that recreates the Middle Ages. "We take the writings and literature of the period and create the medieval world as people wished it was, not as it actually existed," he said. "We stress the honor, gallantry and chivalry that are prevalent in the literature."

The SCA holds events almost every weekend in which members gather at a campsite and assume their medieval personae. Tents are allowed, but radios and similar 20th century trappings are not encouraged, Derby said.

"We call it living the dream," he said. "The dream is hard to explain. It's fulfilling and achieving the goal that we set, and the goal for me is to try to believe that I'm living in the 14th century."

Other members of the SCA become blacksmiths, weavers, lapidaries or armorers at the events. "Anything that people did back then is acceptable," said Derby. "We



Bill Derby as William Allen of Monmouth

dress in the actual styles of the periods we study, from the beginning of the sixth century to the end of the 16th century."

Although most members adopt a European persona, some become American Indians, Arabians or Orientals

from the period, he said. Each participant develops a detailed profile and history of his or her character and relates these to others through storytelling.

Derby attends events of the Fort Worth and Dallas-area SCA organizations. For SCA purposes, Fort Worth is called the Shire of Elfsea and Dallas is called the Barony of the Steppes. The SCA is well-organized and has various titles and offices that members can hold.

Derby — that is, William Allen of Monmouth — is known as the Seneschal of the Shire of Elfsea, making him the "king's legal representative in the area." The SCA divides North America into 12 kingdoms. The titles of king and queen are the highest that members can hold in the group, and new royalty is crowned every six months, Derby said.

There are about 20,000 SCA members worldwide and perhaps 80,000 additional persons who participate in the society's events without officially joining, Derby said. The SCA was founded in California in 1966 when it evolved from the theme of a going-away party for a woman who was joining the Peace Corps. Derby joined two years ago after he was introduced to the organization by a friend.

Derby said there is no special requirement for SCA membership. Members have many different backgrounds. The organization is open to single individuals and families. There is nothing "secret" about the SCA, and visitors are welcome at the events, according to Derby. "We try to supply costumes for visitors," he said.

"We don't try to attract a lot of outside attention because we don't hold our events to entertain the public. We do what we do for the enjoyment of the participants," he said.

Involvement Program Solving Employees' Problems at Lima Tank Plant

Land Systems employees at the Lima Army Tank Plant (LATP) have found solutions to the plant's and to their own job-related problems through a special Employee Involvement Program.

The employees formed teams that identified problems, researched causes, sought solutions, devised implementation and evaluation plans and presented their package to appropriate decision makers.

Joint labor/management committees form the support structure for these teams. One of the committees, the Joint Coordinating Committee (JCC), comprises top plant

management and officials from the three LATP unions. The JCC instituted task forces to tackle concerns too large for any one area team, as, for example, employee services and plant communication.

Joint Functional Committees (JFC) comprising middle management, union representatives and employees were established on each shift. The JFCs solicited volunteers from targeted team areas. Each group of volunteers chose 11 or 12 members among themselves to make up the initial teams.

The teams represent such diverse areas as maintenance,

inspection, welding, machining, tool engineering and the warehouse. Each team selected two facilitators to receive an additional day of specialized training.

Two full-time coordinators, Robert A. Horning from the bargaining unit and Elaine M. Ladicks from management/management support, are working with Dolan and Associates, a labor/management consulting firm, in the training of the teams and will be responsible for the ongoing coordination of employee involvement at the Lima Plant.



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In the year when all Americans celebrate

the two hundredth birthday of the Constitution, millions of us can't even read it.

Experts say curing illiteracy will require the efforts of tens of thousands of us.

That's why General Dynamics has made a grant to help keep the Project Literacy U.S. Hotline operating, toll-free. Call the Hotline, 1-800-228-8813. Find out how you can help someone overcome this terrible handicap.

We think every American ought to be able to read this ad. Don't you?

GENERAL DYNAMICS
A Strong Company For A Strong Country



Season's Greetings



Dear Employees:

At company facilities from California to Rhode Island and from Michigan to Texas, thousands of General Dynamics employees are donating cash, food-stuffs or simply their own personal time to make this holiday season a bit more enjoyable for the poor, for shut-ins and other less fortunate individuals and families.

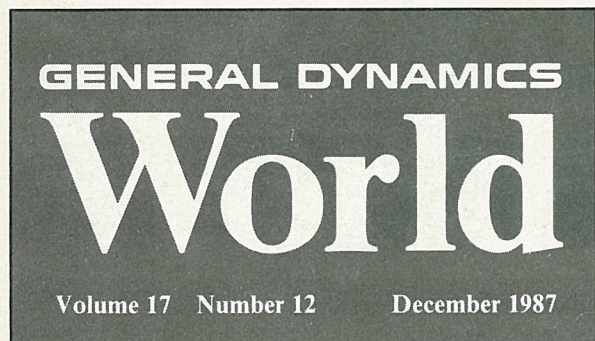
As a company, we certainly aren't unique in doing this. America's needy get help from a lot of sources at this time of year. Few if any of those who give of themselves ever receive any recognition. Even fewer seek it. But it's worth pausing to think about the very large number of GD employees who do give.

I have remarked many times during the past two years how impressed I am with the caliber of our people. My comments aren't platitudes. They're very

sincere. And my impression is reinforced every day.

So I'd like to thank all of you who take a moment at these holidays to think about others — and who then take many moments to act unselfishly on that thought. While I might not know you personally, be assured that I'm very glad you're on our team. And that it's men and women such as you who make this season, as Charles Dickens described it, "... a good time; a kind, forgiving, charitable, pleasant time..."

Stace



Company Is Praised For Progress Made In Navy Agreement

The company has been congratulated by Assistant Secretary of the Navy Everett Pyatt for successfully completing the first phase of the company's suspension agreement with the Navy.

In a letter sent Nov. 30th to Chairman and Chief Executive Officer Stanley C. Pace, Pyatt expressed pleasure that the company and the Navy had reached a major milestone by completing all of the items identified in the suspension agreement. "Your direct and personal leadership in accomplishing this was the key to success," Pyatt wrote. "The book is closed on Phase I."

"In Phase II," he wrote, "we must build on the structure that has been put in place. The corporate culture has changed but it will require your continued personal involvement to ensure that the lessons learned in the past are carried into the future. Again, I commend you on your accomplishments to date and look forward to your continuing commitment to this program."

Pyatt's congratulations should be shared by all company employees, Pace said. "The accomplishments noted by Assistant Secretary Pyatt are the results of the dedication and hard work of everyone at General Dynamics," Pace said. "I want to add my congratulations to Secretary Pyatt's."

"It took an outstanding team effort to complete all of the items in the suspension agreement," Pace added. "We must continue to build on our relationship with the Department of Defense."



Navajo Celebration. Navajo children from the Window Rock (Ariz.) Elementary School performed native songs and dances at the 20th anniversary celebration of the partnership between Pomona and the Navajo Nation. Many of the children are related to General Dynamics employees.

Company and Navajos Celebrate Partnership

The General Dynamics facility at Fort Defiance, Ariz., celebrated a 20-year partnership Nov. 13th between the Navajo Nation and the Pomona Division.

During special ceremonies held at the Civic Center Building in Window Rock, Ariz., Sterling V. Starr, Vice President and Pomona General Manager, and Johnny Thompson, Vice-Chairman of the Navajo Tribal Council, exchanged plaques and words of praise for the two decades of cooperation between the company and the Navajo people. Thompson also read a declaration from Tribal Chairman Peter MacDonald proclaiming Nov. 13th as "General Dynamics Day."

In a telegram to President Oliver C. Boileau, MacDonald said:

"I am so proud that today the Navajo Nation is celebrating with General Dynamics Pomona Division the 20th anniversary of our working partnership. The Navajo Nation is gratified by General Dynamics' foresight in locating on our reservation two decades ago. Our relationship is the first of many successful relationships we hope to develop with this country's leading corporations. You will have led the way."

As part of the celebration, the company was the host for a buffet lunch for nearly 600 employees and guests and opened the plant for tours.

Starr said the Navajo plant has served as a positive

(Continued on Page 2)

Christmas Season Comes Alive for Employees With Hospital Fund Drive

A community event with bright decorations, familiar carols and smiling faces — all the external signs of Christmas — started this holiday season for approximately 250 employee volunteers from Fort Worth and Data Systems Central Center.

It was the deeper significance of the event's purpose, however, that made the season come alive with holiday cheer for the employee participants.

The occasion was the Cook-Fort Worth Children's Medical Center Toy Depot, which was held to raise building funds for a new children's hospital. The employees supported the effort by stocking, demonstrating, selling and sacking donated toys during two evenings and a weekend. Proceeds from the sales went to the building fund.

The Toy Depot was the largest community relations project, by number of volunteers, in which Fort Worth has participated. The participants wore blue F-16 T-shirts that identified them as General Dynamics employees. Some of the volunteers described the majority of the Toy Depot staff as a "sea of blue," proclaiming the company's involvement.

Cook-Fort Worth Children's Medical Center is the largest children's hospital in the Fort Worth area, serving



Toy Depot Volunteers. A few of the many Fort Worth and Data Systems Central Center employees and family members who participated in the recent Toy Dept event pose with their Santa Claus. Shown at left are Rick Lopez, Kim Lopez and 5-year-old Dustin Lopez. At right are Carol Pendley, Rena Jones and Anthony Brown.

(Continued on Page 2)

Company Volunteers Help the Homeless Over the Christmas Holidays

General Dynamics employees in San Diego have answered a call for help in their community by providing volunteers for a massive program to provide food and shelter for San Diego's homeless over the holidays.

It started with a message from San Diego Mayor Maureen O'Connor to Father Joe Carroll, President of the St. Vincent de Paul Center. Mayor O'Connor wrote:

"As the Christmas season comes upon us, it is time for the city to respond to the housing needs of the homeless during the holidays. I am requesting that you help the city manage this awesome task."

Father Joe called upon the Center's network of volunteers, among them employees from the four San Diego General Dynamics divisions, to provide a large work force that will take care of the homeless from Dec. 24th through 28th.

Glen E. Richardson, Space Systems Marketing Manager, serves as a contact point for General Dynamics volunteers and is coordinating the interdivisional team to get ready for the five-day holiday event.

"We feel concern for the homeless particularly during the holidays, especially for the children," Richardson said. "The Center has asked for our help, and we're ready to do what we can to make the holiday project a success."

During the five days, four shifts of volunteers will provide service to thousands of homeless people at a large downtown San Diego hall. Volunteers will set up the shelter, greet people, distribute gifts, coordinate and escort people to indoor bunk areas, serve coffee and provide security.

Since 1982, the St. Vincent de Paul Center has provided 1,200 meals and 200 beds daily to San Diego's homeless. In July the new St. Vincent de Paul Emergency Facility opened covering an entire San Diego city block. The opening of the new building was the culmination of an intense effort spearheaded by Father Joe, who gained national attention for his ideas on service to the homeless as well as his ability to raise \$11 million to make the new center a reality.

The new facility is capable of housing 400 people and serving 2,000 meals a day. It also has a medical clinic, shower and laundry facilities, counseling offices, a food distribution center and a day room for transients. Its warm California mission style departs from the cold, institutional atmosphere of other such shelters. The center believes in breaking the cycle of homelessness and its negative effects on children and families.

Before the new center opened in September, the General Dynamics team pitched in during evenings and weekends

to help get it ready. Many of those volunteers continue to provide long-term service to the Center in many different areas.

Harvey Jewett, a Space Systems engineer, recently took a break from his usual carpentry work for the center to play Santa Claus in the "tot room," along with Gloria Conrad, an Electronics retiree, Shirley Frazier from Elec-

tronics, and Bonnie Cosentino, Data Systems Division-Western Center, who supervises children in the evening, enabling parents to attend counseling sessions and classes.

Besides lending their time and talents, General Dynamics employees have supported the Center with financial gifts through the employee Con-Trib clubs.



Santa Claus (Harvey Jewett) and Volunteers (left to right, rear) Gloria Conrad, Bonnie Cosentino and Shirley Frazier

General Dynamics, Navajos Celebrate

(Continued from Page 1)

example of economic development for the Navajo Nation, and the working relationship with the Navajos has been marked with cooperation. The success of such a positive operating environment is reflected in the high quality of missile and aircraft electronics equipment produced there and the dedication of the operation's employees, he said.

Pomona has operated a manufacturing and assembly facility on Navajo Tribal lands at Fort Defiance longer than any major employer on the reservation.

In 1967, the company wanted to expand its electronic assembly capability to handle excess work at the Pomona plant, Starr said. Locating on the reservation was attractive since there was an abundance of available land, as well as a ready, trainable and dedicated work force with a proud heritage of high-quality craftsmanship, he said.

General Dynamics employees 500 people, 98 percent of whom are Navajos, at the facility. They assemble circuit cards and round wire harnesses. These are sent to the division's plant in Pomona to be integrated into Standard Missile and Phalanx weapons systems.

The advantages of a dedicated native work force have been realized, Starr said. The company-provided employee training program enjoys a 90 percent acceptance rate. Management assimilation has been another success story. The facility opened with a management team of 26 non-Native Americans. Today, all first line supervisors, two production line managers and all test personnel are Navajos. Much of the supplies and other outside purchases are made locally. The annual payroll is nearly \$6 million.

The Navajo Nation has been aggressively seeking additional employers for the reservation and often cites the facility as an example, Starr said. Last July, Boileau participated in an American Indian-sponsored Economic Council meeting where company/reservation cooperation served as a model for other firms. Also, in September David Hartman led a TV production team to the site to film a segment for ABC's "Good Morning America."

Christmas Season Comes Alive for Employees

(Continued from Page 1)

many counties in west and north Texas. The hospital treats all children in its service area without regard to a family's ability to pay. Last year the hospital treated 23,000 patients; 26 percent of its budget was for unreimbursed care.

The hospital needs a new building to improve its services and better accommodate an increasing number of patients.

While the Toy Depot volunteers donated their time because it was a worthy cause, many found the event was also a lot of fun.

"The best part was seeing the kids there running around with their parents and the look they'd get when they'd see the Will Rogers Exhibit Hall full of toys," said James S. Clark, an Aeroanalysis engineer who worked at the event on all four days. "It was the best time I've had in about 20 years."

"I volunteered because I think it's important for us to help the less fortunate, especially at this time of year," said Mark W. Tshurr, a volunteer from Fort Worth's Support Analysis Engineering group. "All the toys were new, and the prices were below regular retail."

Carol F. Pendley, Central Center Human Resources Representative, said she and several of her friends worked at the Toy Depot on an evening shift. "It was like a party for us," she said.

Stress Analysis engineer Rena J. Jones explained an aspect of the event that she enjoyed. "In demonstrating the toys, we got to play with them a little," she said with a smile.

Many participating employees said company volunteers shared a feeling of camaraderie.

Gina Ravnaas, chairman of the hospital's Toy Depot committee, described the General Dynamics volunteers as prompt, courteous and energetic. "I can't say enough about the help they gave us. The GD people had a very warm and caring attitude, and we could tell that they really wanted to be there," she said.

Norman B. Robbins, Fort Worth's Community Relations Manager, said the Toy Depot was an ideal event for company participation because it involved youth welfare and health care, two areas being emphasized along with education and civic involvement in the company's community relations efforts.

Pomona Cashes In on Energy-Saving System

Pomona is more than \$100,000 ahead because of the ingenuity of Kris K. Gossain, a senior design and construction engineer. Gossain designed and supervised building a unique thermal storage system for cooling the metal presses in the division's Building 30.

Thermal storage involves forming ice on the surface of evaporator tubes and storing it in an insulated tank until chilled water is needed for cooling purposes. Then a pump circulates cold water from the ice storage and returns the warm water to the tank for recooling by the melting ice.

Normal systems generate cooling loads as required during that part of the day when energy costs are highest. By forming the ice at night, the thermal system takes advantage of lower off-peak power costs. The daytime,

on-peak demand charge is nearly 17 percent higher than nighttime, off-peak charges, according to Southern California Edison Company (SCE).

SCE has established many incentive programs that include cash rebates for doing feasibility studies as well as for installation of approved energy savings systems operating during off-peak periods. The company received more than \$6,000 following Gossain's study for the project and an additional \$50,000 last week as a rebate for the construction. In addition, a savings of \$48,000 should be realized during the first year of operation.

Gossain is involved in a similar project that will be two to three times as large and will generate air conditioning for the largest building in the plant.

Valley Systems, Abilene Facility Tie for President's Award for MEP By Dave Lange

The 1987 Corporate review team found that Valley Systems and Fort Worth Division's Abilene Facility were fit to be tied after the team's annual corporatewide Management Effectiveness Program (MEP) evaluations. Valley Systems and Abilene finished in a dead heat for top location and will share the 1987 President's Award, a distinctive trophy that recognizes the best overall MEP review performance.

MEP, now in its third year, provides a disciplined process for measuring the overall effectiveness of the company's business practices and developing appropriate corrective action plans. All participating locations are evaluated by the corporate review team for their preparation and conduct of their internal reviews and the results attained. Based on these evaluations, President Oliver C. Boileau presents gold, silver or bronze awards to participating locations to recognize management team performance in the MEP process. Awards are presented during the Third Quarter Performance Review.

This year, Valley Systems and Abilene finished in a deadlock. Because there is only one President's Trophy, a coin toss determined that Valley Systems would keep the trophy for the first six months and Abilene for the last six months.

Accepting the President's Trophy from Boileau were Ralph E. Hawes, Vice President and Valley Systems General Manager; Charles A. Anderson, Vice President and Fort Worth General Manager; and William J. White, General Manager-Abilene Facility.

The remaining 1987 MEP award winners are:

Gold - Abilene Facility, Electronics and Valley Systems;
Silver - Corporate Office, Data Systems-Central Center, Data Systems-Western Center, Lima Plant, Pomona and Quonset Point Facility;

Bronze - Convair, Camden Facility, Data Systems-Eastern Center, Data Systems-Headquarters, Electric Boat, Electro Dynamic, Fort Worth, Land Systems, Scranton Plant and Space Systems.

Boileau, who has been MEP Team Chairman since MEP's inception, is retiring in April and will be succeeded by Joseph T. Doyle, Staff Vice President-Internal Audit, as Team Chairman.



President's Award. Charles A. Anderson (left), Vice President and Fort Worth General Manager, presents the Management Effectiveness Program President's Award to William J. White, General Manager-Abilene Facility.

First Turkish-Produced Fighting Falcon Delivered

The first Turkish-produced F-16 was delivered to the Air Force of the Republic of Turkey two months ahead of schedule on Nov. 30th by TUSAS AEROSPACE INDUSTRIES (TAI).

The F-16C is the first of 152 Fighting Falcons that will be delivered by TAI. It was flown for the first time on Oct. 11th by TAI test pilot Sener Koltuk and was originally scheduled to be delivered in January 1988.

Teleconference Use Saves Company Travel Costs

Electronics and Fort Worth divisions avoided costs of about \$241,000 by using teleconferencing instead of face-to-face meetings during an eight-month period when Electronics' F-16 Advanced Computer Avionics Intermediate Shop met weekly with its Fort Worth customers.

Teleconferencing eliminated the need for travel by Fort Worth representatives and the San Diego-based Electronics team, thereby avoiding travel costs and time lost in transit. In addition, Electronics' entire team was able to participate in the meetings rather than a few selected

engineers and managers who would have traveled.

"Teleconferencing facilitated support of an important contract, enabled us to maintain tight schedules and saved a substantial amount of money," said Richard F. Smith, Program Manager, who led the Electronics team.

The conferences were held with Fort Worth's Automatic Test Equipment Acquisition and Support group, headed by William B. Anderson Jr., Manager of ATE Requirements and Integration, and Charles H. Maurer, Chief of ATE Acquisition and Support.

Kirsten Koepsel Keeps Her Family's Tradition Alive at Fort Worth By Joe Stout

Kirsten M. Koepsel is carrying on a family tradition with the job she performs in the aircraft industry in Fort Worth.

She is following in the footsteps of her grandmother, Christine C. Adams, who assisted in B-24 Liberator production in the Fort Worth factory during World War II. Adams, who is deceased, moved to Fort Worth from a smaller town in 1942 and worked in the wing assembly area of what was then called "the bomber plant."

Adams was one of thousands of women during the era of "Rosie the Riveter" who took heavy manufacturing jobs that had traditionally been held only by men prior to World War II.

Koepsel, a senior engineer in Metallic Materials and Processing, is one of a growing number of women who are working in engineering fields. She performs advanced materials research in support of the National Aero-Space Plane (NASP) program. She has lived in Oklahoma, New Mexico, North Carolina and Kansas. She holds a degree in metallurgical engineering from the University of Tennessee.

Koepsel's mother, Dorothy Koepsel of Port Aransas, Tex., recalls that her mother was involved in production of the first airplane delivered from the Fort Worth factory in 1942. She said her mother enjoyed her job at the factory because the conditions and pay were good and she felt she was contributing something to the nation's defense.

The similarities of her daughter's and mother's employment at the Fort Worth plant, including their involvement with the latest aircraft technologies in their respective times, "keeps alive the pioneering spirit of all workers," Dorothy Koepsel said.



Family Tradition Upheld. Fort Worth engineer Kirsten Koepsel looks at photos of the Fort Worth "bomber plant" in the 1940s when her grandmother worked on the assembly line.

DSD-Eastern Center Benefits from Work By Retarded Persons

The Data Systems Division-Eastern Center in south-eastern Connecticut is reaping benefits from the services provided by the New London County Association for Retarded Citizens (ARC).

A five-member ARC mobile janitorial crew logs a 25-hour work week at the center. Duties consist of cleaning lavatories, vacuuming carpets, dusting desktops and furniture, cleaning windows, disposing of trash and mopping tile floors.

Of the crew initially assigned to the center, one worker has since been hired by the cafeteria as a full-time employee.

Apart from the rewards of a job done well are the invaluable fringe benefits of new friendships and a needed sense of belonging, said B. J. Breen, Division Vice President and Eastern Center Director. "The crew members felt that they belonged when we gave them special picture badges," he said.

The crew was initially subcontracted to work at the Eastern Center by Peter Mercier, Chief of Facilities, in August 1986. It is supervised by job coach Paula O'Brien, who said that, by interacting with center employees, all of the workers have developed social skills useful in an independent setting. "In addition, their janitorial skills have improved significantly since they've been at the Eastern Center," she said.

Carl Loges, Executive Director of the New London County ARC, said the program provides an opportunity for handicapped individuals to develop skills and use them in the marketplace.

"The program's goal is to help our people become active, valued citizens," Loges said. "No one at ARC wants charity, just the chance to become productive."

Once the workers learn a skill, they know it as well as anyone else, he said. "Housekeeping to them is an accomplishment. They're challenged in what they're doing."

"The result is that they're respected for the work they do. They feel valued, and that affects their self-esteem in many ways," Loges said.

The Eastern Center is pleased with its involvement in the ARC program, said Joan Evans-Hunter, Eastern Center Community Relations Administrator.

Savings and Stock Investment Plans			
	Annual Rate of Return for the 12 Month Period Ending:		
	Oct. 1985	Oct. 1986	Oct. 1987
Salaried			
Government Bonds	15.0%	12.5%	5.5%
Diversified Portfolio	22.6%	37.7%	7.6%
Fixed Income	12.4%	12.0%	11.6%
Hourly			
Government Bonds	15.0%	11.9%	5.7%
Diversified Portfolio	22.2%	38.3%	8.5%
Fixed Income	12.4%	12.0%	11.7%
GD Stock Closing Price	\$62.37	\$72.75	\$50.00

Warranty for Citation Is Extended by Cessna

Cessna has extended the airframe warranty for all its Citation business jet models from three to five years.

The new warranty coverage includes all parts and labor used in repairing the airframe and systems under the terms of the warranty.

The new warranty is effective on all Citations delivered after Oct. 1st.

GENERAL DYNAMICS

World

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Manager of Internal Communication: Edward D. Williams

Contributors: Julie Andrews, Dick Boudreau, Larry Elwell, Graham Gavert, Jim Gilkerson, Don Gilleland, Dean Humphrey, Jack Isabel, Dave Lange, Jerry Littman, Jack Price, Tom Rule, Chris Schildz, Joe Stout, Joe Thornton

Companywide Employee Survey Reports Compiled by Sue L. Shike

Task Forces Are Addressing Concerns About Reward and Recognition System

One of the areas of concern raised by the employee survey was the company's reward and recognition system. Task forces throughout General Dynamics are working on action items addressing that concern. While other reports will be forthcoming, here's the progress made on some of those items.

In response to one of the corporatewide action items, two reviews of the salaried compensation system have begun. The first is the annual examination of salaried-exempt pay ranges, and the second is a study of the salary grades that have been assigned to salaried positions. The data from these reviews, along with the recommendations of division management, will be studied at the corporate level. Any changes in grades assigned will be made before the next merit review cycle.

The first review analyzes data supplied by the divisions and four major salary survey consulting organizations. Prior to submission of their data, the divisions surveyed more than 50 of their people and product competitors that have similar positions. Comparison of all the data with General Dynamics data determines which adjustments, if any, need to be made.

The second review compares the relative values placed on jobs at General Dynamics with the relative values placed on similar jobs, known as benchmark positions, at other companies. This review is expected to be completed in March, allowing any needed adjustments to be made with the merit review.

Videotape Will Explain Compensation System

A videotape is being produced that will help employees understand the company's salaried compensation system and merit review procedures. A 15- to 20-minute videotape will be part of presentations about salaried compensation.

Meanwhile, compensation communications already used by the divisions are being reviewed to catalog good examples to share throughout the company and to identify areas where additional material can be developed.

Pomona Answers Employee Salary Questions

A study has been completed that answers a question raised by the Pomona employee survey: "Is there an overall, specific or perceived salaried pay problem at Pomona?"

The study concluded there is not an overall salaried pay problem, but there are specific pay inequities that must and will be corrected. Another conclusion is the division must continue to improve communications about Pomona's salary philosophy of pay for performance. Finally, the study concluded the division must continue a compensation program that is competitive.

To answer the question, the company reviewed hires and voluntary terminations, performance codes of terminations, employee survey data, global wage data and salary rates of benchmark job classifications of competitors. A benchmark job is one that has the same job content in several companies, allowing comparisons.

Results indicate the company attracts employees from competitors in about equal proportion to those the company loses. There are exceptions caused by

competitors who pay exaggerated rates for specifically needed skills. However, an interesting sidelight is that 75 percent of former Pomona employees interviewed by telephone said they would return to General Dynamics if given the opportunity.

A comparison of terminations to their performance codes shows the division's philosophy of pay for performance is working. Overall, those employees who are rated high are terminating less than those rated low. Salary survey data on pay rates for the benchmark jobs shows the division in the same range as competitors. There are exceptions in a few specific classifications, which will be addressed.

An analysis of all factors showed Pomona's salary ranges were comparable to those of competitors, that the division loses people to competitors for a wide range of reasons, but attracts an equal number; that the division retains employees on a pay-for-performance principal; and the division has specific salary inequities in three groups.

Camden Recommends Improvements in Job Opportunities

Three recommendations have been made to help administer the Job Opportunities Awareness Program (JOAP) at smaller locations within General Dynamics. The report is the result of a division specific action item from the corporatewide survey action plan.

Employee survey results showed that not all openings are posted and the employees and management do not understand the program. An action plan developed by Norman C. Stranberg, General Manager-Camden Operations, has been designed to assist the administration of the program at small locations such as the Corporate Office, the Lima plant, the Abilene, Camden and Navajo facilities and General Dynamics Services Company.

The recommendations:

- Commitment by management to the JOAP system. "The key to the success of an internal promotion system rests initially with management's genuine commitment to promotion from within," Stranberg said.
- Improved communications about promotions, JOAP criteria and impartial reviews.
- Ways to appeal to neutral parties for review of stated job requirements that are compared to the credentials of the selected employee versus those of employees not selected.

Agreement Is Signed on Use of U.S. Facilities

General Dynamics and the Air Force have signed an agreement allowing the company to use government-owned facilities in California and Florida for its Commercial Atlas/Centaur program.

The agreement allows the company's Space Systems Division to fabricate parts and assemble commercial Atlas launch vehicles at the Western Space and Missile Center, Vandenberg AFB, Calif. Additionally, it provides authority for up to eight launches per year from the Eastern Space and Missile Center, Cape Canaveral, Fla. The company will reimburse the government for any direct costs of goods and services it provides.

General Dynamics has been involved in Air Force programs at Vandenberg for the past 17 years, refurbishing and launching surplus Atlas ICBMs as space launch vehicles. Space Systems will continue to use these same

facilities for commercial Atlas assembly and the ongoing support of government Atlas activities. Assembly of the Centaur high-energy upper stage will continue at Space Systems.

At Cape Canaveral, two fully operational launch pads at Complex 36 will be used for commercial and government-sponsored Atlas/Centaur launches. General Dynamics has been launching Atlas/Centaur from Complex 36 since 1962.

The Air Force Commercialization Agreement supplements an earlier agreement reached between General Dynamics and the National Aeronautics and Space Administration. The NASA agreement provided General Dynamics the right to use NASA-controlled facilities for commercial manufacture and launch of the Atlas/Centaur.

Air Force Reserve at Luke AFB Gets Its First Factory-New F-16C/Ds

The Air Force Reserve gave new emphasis to the words "total force," which refer to cooperation between active and reserve armed forces units, when its 944th Tactical Fighter Group began flying factory-new F-16C/D aircraft recently.

The 944th TFG officially marked its reactivation and its receipt of Fighting Falcons with a ceremony at Luke AFB, Ariz. The unit's 302nd Tactical Fighter Squadron is the first in the Air Force Reserve to receive aircraft right off the production line and the second to fly the Fighting Falcon.

The squadron's aircraft are the first U.S. Air Force aircraft to be equipped with the upgraded Pratt & Whitney engine, the F100-PW-220.

Maj. Gen. Roger P. Scheer, Chief of the Air Force Reserve, Brig. Gen. John J. Closner, Commander of the Reserve's 10th Air Force, and Col. Jerry A. Wrucha, Commander of the 944th TFG, were speakers at the reactivation. General Dynamics was represented by Mike A. Curtis, Fort Worth Vice President-Special Assignments.

General Closner formerly commanded the 944th TFG's parent unit, the 419th Tactical Fighter Wing at Hill AFB, Utah. The 419th TFW became the first Air Force Reserve F-16 unit in 1984.

General Scheer and Colonel Wrucha are both former commanders of the Air Force Reserve's 301st Tactical Fighter Wing, an F-4 unit at Carswell AFB, Tex., which shares a runway with the Fort Worth F-16 factory.

The history of the 302nd TFS began in World War II when it was first activated as the 302nd Fighter Squadron, one of four fighter units made up of all black members. Members of the unit were known as the Tuskegee Airmen, since most of their training took place at Tuskegee, Ala. The squadron's history was emphasized in the ceremony, which was attended by several members of the original 302nd FS.



F-16C of the Air Force Reserve's 944th TFG, Luke AFB, Ariz.

Electric Boat Opens Site Office in Virginia

Electric Boat has opened a site office in Newport News, Va., and Robert H. Rathbone has been appointed Manager there, heading a group of approximately 10 engineering/design personnel.

The need for the new office stems from the Navy's decision to split the design award for the SSN 21 submarine — the newest class of submarine — between Electric Boat and Newport News Shipbuilding. The office will serve as a liaison, providing communication to Electric Boat's Groton plant as Newport News progresses with its portions of the SSN 21 design project.

At the same time, about a dozen employees from Newport News Shipbuilding will be housed in Groton to perform the liaison function with their company.

GOES Contract Will Go to Space Systems

Space Systems has been selected by NASA and the Department of Commerce for negotiations leading to a launch services contract for the department's National Oceanic and Atmospheric Administration (NOAA) meteorological spacecraft GOES (geostationary operational environmental satellite) I, J and K. The contract includes options for an additional two launches of GOES L and M.

NASA, acting as NOAA's agent, will award the contract upon reaching final terms and conditions.

This contract will be the first under NASA's plan to acquire ELV transportation services commercially. Space Systems will provide the Atlas/Centaur launch vehicle as well as mission integration and launch services. Space Systems will assume total systems performance responsibility for the overall program including subcontractor

management.

GOES spacecraft provide near-continuous, high-resolution visual and infrared imaging of weather systems over large areas of the earth. They are especially valuable in identifying hurricanes at an early stage and other major storms and in providing critical data needed for routine weather forecasting.

The selection of Atlas/Centaur for the three GOES launches brings to four the number of firm commitments for launch services with options for four others. In September the European Telecommunications Satellite Organization (EUTELSAT) announced selection of Atlas/Centaur for a 1990 launch of a EUTELSAT II communications satellite.

Panel of Space Experts Talks to Students Nationwide Via Satellite By Julie C. Andrews

What does it feel like to take off on a rocket? Is the high cost of the space program worth it when we have so many problems on earth? Should the United States join the Soviet Union in a Mars exploration program?

These and other questions were put to a panel of experts by students nationwide in a 90-minute interactive teleconference broadcast via satellite Nov. 4th from studios in San Diego. Dr. Alan M. Lovelace, Vice President and General Manager of Space Systems, and Bruce M. Cordell, Space Systems scientist and writer, joined Walter F. Schirra, veteran astronaut of the Mercury, Gemini and Apollo programs, in responding to questions about the past, present and future of the space program.

Space Systems funded the program, which was the second in a series of three teleconferences that have dramatically demonstrated how space age technology can serve education. The project was organized by Gloria McMillan, California's finalist for NASA's Teacher In Space Program, and the San Diego County and City school offices, with production and direction provided by Convair's Motion Pictures and Television department.

"General Dynamics has shown a commitment to bringing space education into the elementary and secondary schools," said McMillan. "Its support has contributed to making San Diego schools leaders in the use of interactive satellite teleconferencing for students in the classroom." More than 3,000 school districts nationwide were invited to participate in the most recent teleconference, McMillan said.

Last year, Space Systems support made possible the



Studio participants. Joining in a space education teleconference were (left to right) La Jolla High School student moderator Michael Nassir, Astronaut Walter F. Schirra, Dr. Alan M. Lovelace and Bruce M. Cordell.

first teleconference in the series with astronaut Russell L. "Rusty" Schweickart. The third teleconference, featuring

Apollo 17 crew members Eugene Cernan, Ronald Evans and Harrison Schmitt, was broadcast Dec. 10th.

Alert Employees Help Save Lives in Turkey After Bus Accident

Two General Dynamics employees and a family member in Turkey recently showed that company representatives contribute a lot to their communities when they are assigned abroad, just as they do at home in the United States.

Fort Worth employees Mary E. Moore and Donald D. Taylor, who are presently working at the TUSAS AEROSPACE INDUSTRIES factory in Murter, Turkey, and Caral Freeman, wife of employee James E. Freeman, were returning to Ankara from the Mediterranean Coast recently when they came upon a tragic highway accident.

A truck carrying more than 30 persons had plunged down a steep embankment several miles from the nearest village. Taylor, Moore and Freeman were the first to arrive and immediately stopped their car to assist the survivors.

"It was a group of farm workers, and there were 12 children who looked like they were under the age of 10," Caral Freeman said. "Most of the people appeared to be in a state of shock. They also had many of their belongings on the wrecked truck." There were five fatalities and approximately 20 injuries, according to a Turkish newspaper account.

"We did as much as we could to help the injured and comfort the children," said Freeman, who has worked as an aide in emergency services at a hospital. "We went down the hill and started carrying people up to the road."

After awhile, an empty bus came down the highway. The three Americans flagged down the bus and helped the survivors board it to be taken to a medical facility.

The assistance provided by the trio, especially in taking charge of an otherwise chaotic situation, undoubtedly helped save lives.

Freeman described the effort while on vacation in Fort Worth recently. She noted that her family has been living in Turkey for the past year and is very happy there. "We love it," she said. "The Turkish people are real nice to us, and the country's beautiful." The Freemans have two children who attend an American school in Ankara.

Jim Freeman is assigned as a Quality Assurance engineer at the TAI factory, which is coproducing F-16s for the Turkish Air Force. Moore is an aircraft maintenance specialist, and Taylor is a project factory specialist.

Space Systems Gets \$5 Million Contract For Launch Study

Space Systems Division has been awarded a \$5 million, one-year study contract from the Air Force Space Division to design an advanced launch system (ALS) that is capable of lifting heavy payloads into space. The goal is to have a fully operational ALS system by the mid to late 1990s.

ALS is an outgrowth of the Space Transportation Architecture Study (STAS), a joint Department of Defense/NASA evaluation of national space transportation and technology requirements through the year 2010. Space Systems participated in the STAS in 1985 and 1986. STAS identified the need to develop an unmanned cargo vehicle with more capability, higher reliability and a 10-1 lower cost ratio than today's systems have.

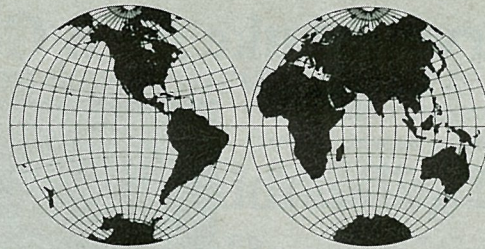
"Space Systems will take a total system approach that includes integrating all system elements concurrently," said William C. Strobl, ALS Program Director. "Contractors are pursuing new propulsion systems, lightweight materials and emerging technologies in manufacturing in order to greatly reduce the cost of getting into space." The key to achieving the cost and reliability goals lies in the understanding of intersystem element requirements before beginning any design activity, Strobl said.

ALS is a joint initiative between the Department of Defense and NASA. Phase I study efforts will lead to system design, with a decision on its full-scale development in 1990.

Videotape Wins

A Convair videotape on security has won first place in the 1987 video competition at the international meeting of the American Society of Industrial Security.

"Secrets . . . Safe and Sound" was written, produced and hosted by Connie K. Terwilliger, a producer/writer in the Convair Motion Pictures and Television department. The tape is being used to educate and inform Convair and Space Systems employees about security.



Around the World

CHQ: Jack E. Snyder joined as Corporate Security Administrator-Washington . . . Glen W. Berger as Supervising Senior Auditor . . . William C. Tuggle and Gary E. Jones as Senior Subcontract Auditor . . . Myra S. McKittrick as Corporate Manager Arms Control . . . John H. Burba III as Internal Audit Chief . . . David J. Pooler was appointed to Corporate Director Procurement & Subcontracts . . . Nancy J. Lazar transferred from Convair and was promoted to Corporate Manager Plans & Analysis.

Fort Worth: Ralph D. Heath was appointed to F-16 International Programs Director . . . William I. McHenry to Regional Program Management Program Director . . . William R. Barclay, Fenwick G. Hatt Jr., Jack D. McAllister and John M. Stratton were promoted to Project Engineer . . . James L. Barwegen to Tooling Supervisor . . . Mary B. Borst, Gregory S. Brown, Joan M. Circelli, Robert E. Hunter, William H. King and James R. Peoples to Engineering Chief . . . Lydia L. Bridier and Edward J. Sinegal to Human Resources Supervisor . . . Robert B. Brown Jr. to Manufacturing Control Supervisor . . . Theodore C. Callender to Senior Project Engineer . . . John L. Cozart and Michael E. Fritcher to Material Planning Supervisor . . . Earl G. Doherty to Material Planning Chief . . . Lowell G. Franklin to Foreman . . . Clyde E. Henley to Engineering Group Supervisor . . . Thomas A. Higgs to Inspection Supervisor . . . Patrick Lee Honeycutt and Robert L. Connell to Logistics Administration Representative . . . Greg L. Ingram to General Foreman . . . Michael D. Lewis to Manufacturing Technology Supervisor . . . Gary W. Lowe to Finance Manager . . . Derrell W. Maxwell to Quality Assurance Engineering Specialist . . . Hilary W. McGartlin and Dan A. Whiting to Field Service Engineer . . . Jerry A. O'Neal to Engineering Administrative Group Supervisor . . . Neset S. Onen to Manufacturing Engineering Specialist . . . Cheryl H. Prince to Assistant Project Engineer . . . Sandra K. Shoemaker to Engineering Administrative Manager . . . Gary B. Tracy to Material Cost Supervisor.

Electric Boat: Lewis F. Baker was promoted to Engineering Chief . . . Thomas G. Nickerson and Frank F. Saunders to Area Manager . . . Richard Eddy, Stephen P. McAuley, Richard L. Short and Keith E. Tetreault to Engineering Supervisor . . . William S. Cleveland to Graphic Reproduction Supervisor . . . John A. Daley to Senior Test Operating Engineer . . . William C. Brown to Foreman . . . At Quonset Point, Alfred McGrath to Design Material Supervisor . . . George Goodman and Steven D. Rayhill to Group Trade Planner . . . Dennis Mayo to Senior Packaging Administrator . . . James Gregoire to Foreman II . . . At Idaho, Richard A. Barker, Paul Billing, Kenneth O. Bragdon, George E. LaChappelle, Willie E. Moore, Theodore R. Powell, Jeff D. Salvie and Daniel E. Smith to Assistant Superintendent . . . Fredrick J. Dannibale to Rad Con Foreman . . . At Kesselring, Austin M. Kairnes to Ships Management Manager . . . Woodman J. White to General Foreman . . . Robert G. Andrews and Anthony Bottari to Foreman . . . At Charleston, Vivian H. Cross to Personnel Supervisor . . . Robert O. Judy to Purchasing/Inventory Control Supervisor.

Convair: Jack G. Fisher was promoted to Engineering Manager . . . Robert R. Wanczyk to Engineering Chief . . . James W. Cody and John H. Conover to Quality Control Chief . . . Thomas A. Maddry to Quality Assurance Chief . . . Elizabeth H. Foster to Administrative Chief . . . Kyle S. Rosier and Donald W. Watson to Manufacturing Operations Supervisor . . . Alan D. Sapowith to Engineering Staff Specialist . . . Tom Da Silva and Eugene B. Howell to Engineering Specialist . . . Joseph T. Fagan, Lawrence I. Kalisher and Ronald N. Roth to Group Engineer . . . Lynne M. Crisafi, Donald J. Dittmann and Daniel L. Mohr to Quality Assurance Group Engineer . . . Vicki J. Jarvis to Financial Supervisor . . . Karl W. Miner to Procurement Administrator . . . Thomas M. Salyers to Accounting Supervisor.

Space Systems: Janet J. Goforth was promoted to Human Resources Manager . . . Michael C. Gass to Facilities Services Manager . . . Richard A. Jones to Program Manager . . . William V. Messer to Operations General Supervisor . . . Charles R. Goforth to Senior Operations Program Administrator . . . William S. Isaacs to Senior Engineering Specialist . . . Robert M. Johnson to Quality Assurance Project Administrator . . . Errolyn C. Hewett-Braham and James A. Green to Engineering Specialist . . . Frank M. Piszkin to Senior Project Engineer . . . Claire M. Doerr to Management Information Systems Specialist . . . William D. Pierce to Senior Industrial Engineer . . . George W. Resch to Quality Assurance Group Engineer . . . Steve R. Blahnik to Project Engineer.

Pomona: Daniel J. Luchsinger was appointed to Communications Director . . . Robert W. Becker was promoted to Quality Assurance Project Administrator . . . Karl O. Cavanary to Pre-Manufactured Engineering Chief . . . Yvette D. Hennings to Procurement Cost Analyst . . . Charles C. Ngo to Electronics Engineer . . . Robyn L. Sharp to Production Control Supervisor . . . Lary T. Atherton to Plant Engineering Supervisor . . . Stanley K. Burrows Jr. to Design Specialist . . . Charles E. Garber to Manufacturing Control Chief . . . Beryl W. Hart and Teresa A. Roy to Group Engineer . . . Louis L. Samples to Plant Engineering Chief . . . Laura R. Abuzalaf to Procurement Cost Analyst . . . Chris R. Arth to Production Engineering Chief . . . Bonnie J. Johnson to Senior Management Systems Analyst . . . Brian D. O'Cain to Assistant Project Engineer . . . Edward Robles to Facilities Manager . . . At Camden, Beverly S. Spears to Cycle Count Analyst . . . Charles D. Walbert and Mark Setzler to Finance Manager . . . Althea A. Hackett to Quality Assurance Supervisor . . . Kim P. Danehower to Cost Control Analyst.

Land Systems: Richard M. Bailey was promoted to Engineering Services Chief . . . Jessie R. Danforth to Administration Supervisor . . . Ronald J. Tarnowski to Accounting Chief . . . James A. Roberts to Experimental Fabrication General Supervisor . . . Gerald F. Bilski to Assistant Program Manager . . . David P. Johnston to Quality Assurance Chief . . . Carol A. Piper to Procurement Planning Supervisor . . . Scott A. Arnold to Audit Analysis Supervisor . . . James E. Heibeck and Jerry L. Roach to ILS Field Operations Site Supervisor . . . William D. Kluge to ILS Field Operations Supervisor . . . Arlene M. Siirila to Accounting Supervisor . . . Dale R. Stucke to Financial Analysis Supervisor . . . Charles J. Hatton III and Cynthia Y. Payne to Engineering Program Chief . . . Otto Renius to Chief Scientist . . . Gary G. Hilty to Inspection General Foreman.

Data Systems: At Western Center, Brian L. Bates was promoted to Associate Software Engineer . . . Richard A. Cassidy to Project Engineer Supervisor . . . Joan M. Roberts to Software Engineer . . . Lily J. Turner to Quality Software Engineer . . . Ernest Simpson Jr. to Business Systems Development Supervisor . . . Robert F. Trost to Property & Material Chief . . . At Central Center, Beverly A. Kellow to Engineering Software Supervisor . . . At Eastern Center, Michael R. Murawski to Operations Services Supervisor . . . Frank A. Szalkowski to Business Systems Development Chief . . . William W. Anderson to Senior Software Engineer.

GDSC: C. Neal Sims was appointed to Proposal Development Director . . . P. Charles Gutzman to Domestic Operations Deputy Director . . . H. Kevin Wille was promoted to Rock Island Arsenal Deputy Program Manager . . . David E. Swiler transferred from Pomona-Camden and was promoted to Accounting Manager.

Cessna: Bruce Garren was promoted to Financial Systems and Corporate Procedures Manager.

San Diego Divisions Team Competes in National Corporate Sports Battle

A General Dynamics team representing the four San Diego divisions took first place in the southwestern region "Corporate Sports Battle" and advanced to the national competition held in Orlando, Fla., Nov. 5th-7th.

Although they did not win the national battle, athletes from Convair, Space Systems, Electronics and the Western Center of Data Systems Division in the regional contests took 37 medals in track and field, swimming and volleyball events.

The 20-member team received an all-expense paid trip to Orlando to compete against 17 other corporate teams from around the country. Highlights from the five-day competition will be broadcast on Entertainment and Sports Programming Network (ESPN) on Christmas Day.

The Corporate Battle competition began as a promotion for corporate health and fitness and also to raise funds for charities. In San Diego, proceeds went to support the Vista Hill Foundation. During the national competition, celebrity teams participated to raise more money for charity.

In July, the San Diego divisions held their own "battle" to select the 20 people who would represent the team. Team members who went to the national battle are: Space Systems — Michael D. Nitschke, Andrew C. Mackay, Scott P. Seligman, Julie M. Lawrence; Western Center — Kathleen M. Keefe, Rosemary Morris, Laura D. Smith, Sally E. Morton, Richard Davidson; Electronics — Kari L. Nilsen, Glenn D. Fisher, Kelly L. Gunning; Convair — Kathryn Eubank, Anne A. Yenigun, Maria T. Franco, Solange Szwarc, Victor M. Felix, Kevrette D. Johnson, James D. O'Brien; Corporate (based in San Diego) — Kevin P. Roney.



General Dynamics San Diego Corporate Battle Team Celebrates Its First-Place Finish in the Southwest Region

U.S. Air Force Awards ADI Systems Contract

The U.S. Air Force has awarded the company an \$880,000 contract for an Air Defense Initiative (ADI) systems integration study. The 12-month study is sponsored by the Electronic Systems Division of the Air Force Systems Command.

Objective of the systems integration study is to define future defense systems for application against airborne threats such as cruise missiles and aircraft. Major areas to be examined include surveillance, engagement and battle management.

The Space Systems Division will lead a team that includes the Systems and Command and Control Division of Westinghouse, the Communications Systems Division of GTE and five other divisions of General Dynamics.

Space Systems will conduct overall integration and participate in the analyses of bistatic radar surveillance systems. Westinghouse will lead the surveillance systems and the command and control studies and participate in antisubmarine warfare analysis. GTE will be responsible

for defining communication system requirements and developing advanced concepts.

The General Dynamics divisions supporting the study effort include Fort Worth, Convair, Pomona, Valley Systems and Electronics. Pomona will direct the analyses of engagement systems such as the advanced air-to-air missile. Valley Systems will provide systems analysis of directed energy and kinetic energy weapons. Fort Worth will conduct aircraft systems studies. Convair will carry out hypersonic glide vehicle systems analyses, and Electronics will assist in the systems engineering and command and control systems areas.

The ADI architecture study is being supported by the General Dynamics Defense Initiatives Office (DIO). The company recently announced formation of the DIO to pursue ongoing and future programs in government Strategic Defense, Air Defense and Conventional Defense initiatives.

Employees Collect Used Eyeglasses For People in Turkey

Employees in Fort Worth's Quality Assurance Department responded to an overseas appeal recently by joining in a Lions Club-sponsored drive to collect used eyeglasses for visually impaired people in Turkey.

More than 130 pairs of glasses were collected in a three-week drive conducted by the employees in cooperation with the Ankara, Turkey, and Fort Worth West Side Lions clubs.

The glasses were presented to James E. Morgan, President of the West Side Lions Club, for shipment to the club in Ankara. They will be processed and distributed in Turkey.

Ankara Lions Club members enthusiastically praised the efforts of the Fort Worth employees and their American club counterparts.

"This effort is typical of our people in Quality Assurance," said D.J. Talley, Fort Worth Vice President-Quality Assurance. "They consistently support the needs of others and appreciated the opportunity to assist in this international effort to improve the quality of life for the less fortunate."

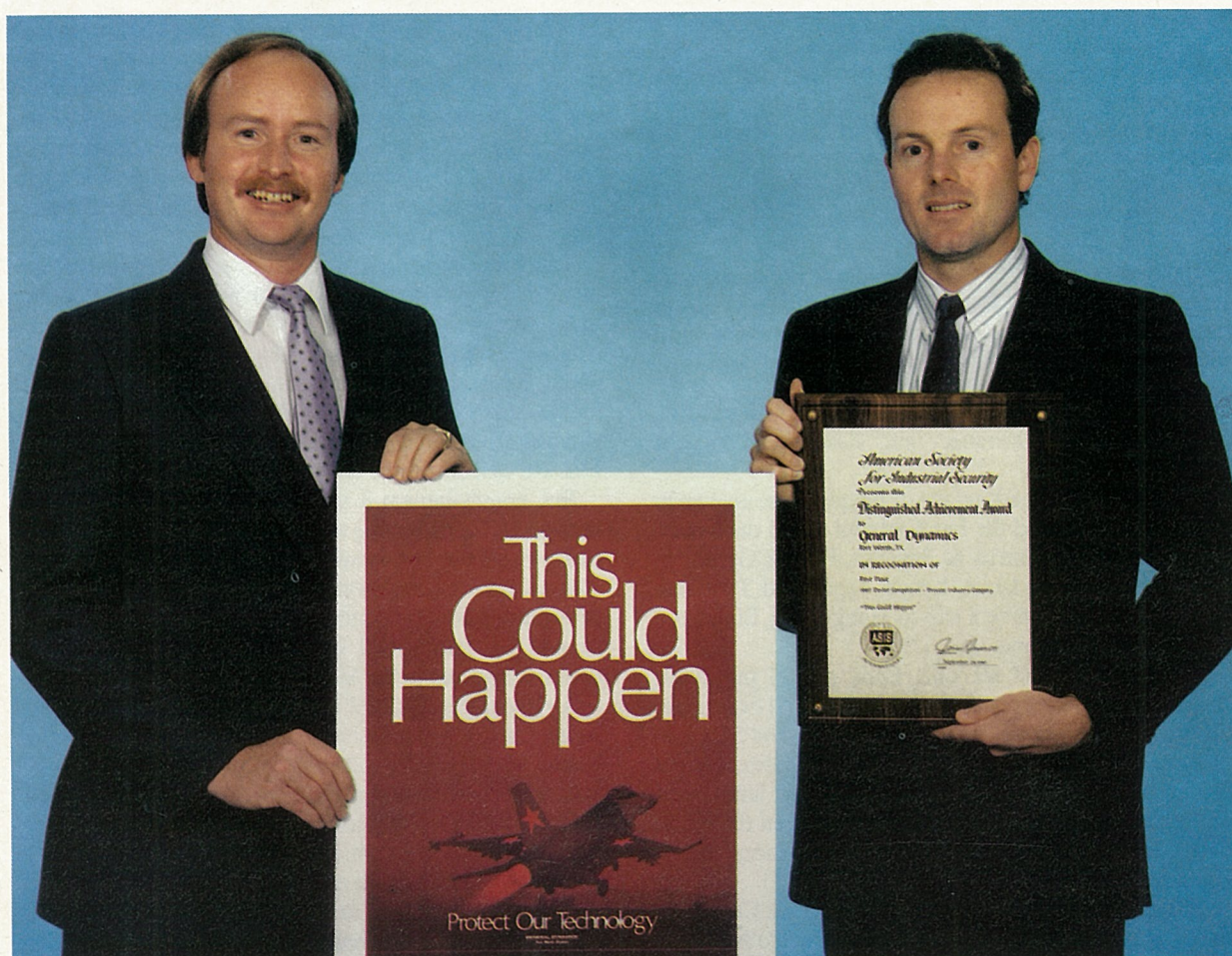
Gift of \$250,000 Goes To United Way Drive

A salute to General Dynamics was the highlight of the 1987 United Way/CHAD Midway Campaign meeting held recently in San Diego. Convair General Manager John E. McSweeney announced a General Dynamics corporate gift of \$250,000 — the largest to date in the 1987 United Way/CHAD campaign and the second largest in the history of San Diego's United Way/CHAD.

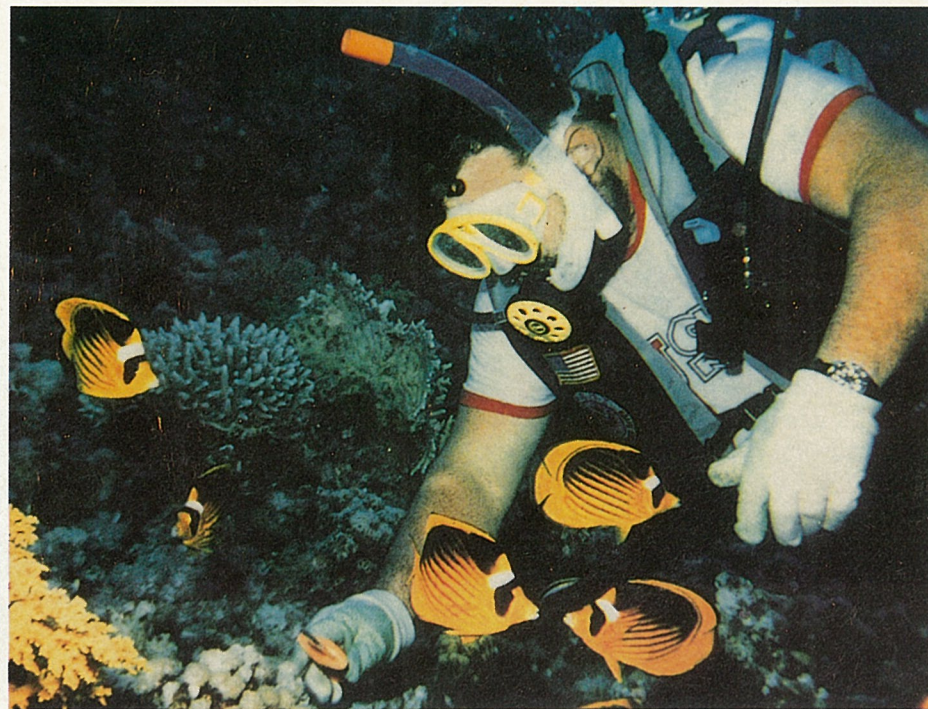
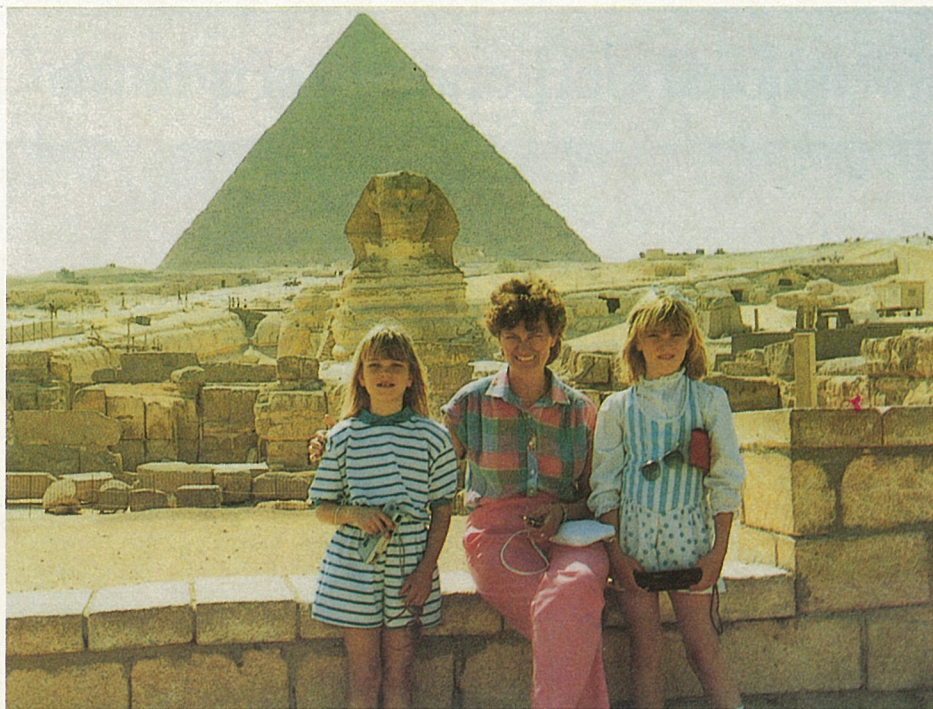
"I'm proud to present this gift to United Way/CHAD on behalf of Convair, Space Systems, Electronics and Data Systems Western Center," McSweeney said. "This company gift, along with the gifts of the thousands of General Dynamics employees through our Con-Trib Club, continues our long-standing tradition of supporting the San Diego community."

McSweeney's remarks described the history of General Dynamics in San Diego dating back to 1935 when Consolidated Aircraft first moved from Buffalo, N.Y., to San Diego. The entire amount of money raised citywide for the Community Chest, as it was known then, was \$197,000, somewhat less than today's General Dynamics gift.

McSweeney is a co-chairman of the manufacturing unit of the United Way campaign in San Diego. Overall, United Way/CHAD has a \$24 million fund-raising goal in San Diego.



Award-Winning Security Poster. Fort Worth illustrator Donald G. Middleton (left) and Steve Wheeler, Supervisor of Department of Defense Security at the division, display security poster and plaque Fort Worth received after the poster won first place in a national contest sponsored by the American Society of Industrial Security. Middleton designed the poster based on a concept provided by Wheeler.



Overseas Assignments Rewarding. Serving abroad on company assignment has its advantages when it comes to sightseeing and recreation. At left, Stacy, Pam and Kelli Bitterburg, family of Richard L. Bitterburg, pose in front of the Sphinx and the Great Pyramids at Giza. At right, James H. Smith feeds exotic fish at the bottom of the Red Sea off the Sinai Peninsula.

Past and Present Blend for GD Services Company Employees in Egypt

This is the fifth and last in a series of articles on the experiences of General Dynamics employees and their families living and working abroad on foreign assignment. Truman E. Cobb, Mary C. Linder and Michael L. Lubinecky contributed to this article.

Egypt conjures exotic images of pharaohs, pyramids, palm trees and Cleopatra. It has more than 6,000 recorded years of history. Although Egypt occupies 386,000 square miles, the fertile Nile Valley is the primary habitable area in Egypt. Along its course have flourished some of the world's mightiest civilizations.

It is in this fertile agricultural mecca that General Dynamics Services Company (GDSC) finds itself playing a major role. GDSC has more than 170 employees assigned to three major programs in Egypt: the Peace Vector (F-16) Program; the Egyptian Tank Plant Program; and the Egyptian Base Operations and Maintenance Program. Another group of employees will soon be deploying to Egypt in the Egyptian Zone Workshop Program.

Since 1981, GDSC personnel on the Peace Vector Program have been assisting the Egyptian Air Force (EAF) in establishing required airbase facilities and in the installation, checkout and maintenance of F-16 aircraft support equipment and in providing structured on-the-job training to EAF personnel. GDSC personnel are supporting the EAF at Anshas Air Base, 20 miles northeast of Cairo, and Beni Suef Air Base, 60 miles south of Cairo.

James H. Smith, a senior aircraft specialist at Anshas, is nearing six years of service on the Peace Vector Program. Prior to joining GDSC, he served more than 23 years with the U.S. Air Force in such places as Vietnam, Thailand, Greenland and Iran. He and his wife, Mary, have witnessed a major change in the living and working conditions in Egypt during their service there.

"My Egyptian counterparts have accomplished a great deal since I arrived in early 1982," he said. "At first they depended upon us almost completely. Now the Egyptian technicians are virtually self-sufficient. My work has become much broader in scope and more advisory in nature. It has been extremely gratifying to watch them develop."

Mary Smith has noticed a great change in Heliopolis, the Cairo community where they live. "It has grown and developed," she said. "The stores are more numerous now and offer much more of the items we were used to in the States. However, a typical American supermarket cannot be found in Egypt. Most of the women agree, though, that with a little work and imagination, one can do very well without that American supermarket. Little can compare with the experience of visiting the local bazaars and markets and purchasing some fresh and exotic spices from an old man wearing a galabeya (long cotton robe) or a huge, fresh head of cauliflower from a felah's (local farmer's) cart. Exotic produce such as mangoes, guavas and a variety of melons, plums and other fruits and vegetables native to the area are available year-round."

Recreational activities for the Smiths have also changed a great deal during their assignment. "For the first few years we were completely occupied with the wonder of a new culture and the wealth of antiquities in Egypt," Smith said. Like most other expatriate families, the Smiths visited the Great Pyramids and the Sphinx at Giza, the Step Pyramids of Saqqara, Memphis, the temples of Karnak and Luxor, the Valley of the Kings where King Tut's tomb is located and Abu Simbel along the Nile River.

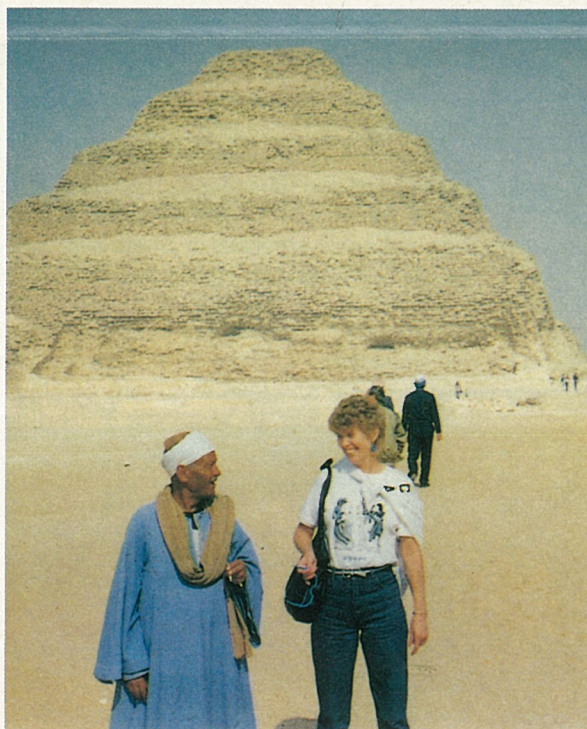
During the summer of 1984, the Smiths discovered the natural wonders of Egypt and the Mediterranean region. Smith and daughter, Maria, took up scuba diving. He has since made 136 dives and logged more than 100 hours beneath the waters of the Red Sea. The coral reefs of the

Red Sea off the southern tip of the Sinai Peninsula are regarded as the most colorful in the world. Although not a diver, Mary Smith does enjoy the sun, the sand and the scenery on their trips to the Red Sea.

On the Egyptian Tank Plant (ETP) Program, GDSC is providing the Government of Egypt the designs for a tank overhaul facility, as well as technical documentation and assistance, training and equipment for the overhaul of the M60A3 main battle tank and the M88A1 recovery vehicle. The major overhaul facility is located approximately 15 miles northeast of Cairo.

For employees Richard L. Bitterburg and Robert L. Pasini, their assignments on the ETP represent their first overseas work experience. The decision to accept the ETP assignments in Egypt was made after much deliberation because leaving friends and family is not easy. However, they say they made the correct decision.

For Pasini and his wife, Fran, the opportunity of international travel is one of the major advantages of living



Fran Pasini and Egyptian Guide at the Step Pyramids at Saqqara

overseas. "We take frequent weekend trips to Alexandria, located on the Mediterranean Sea," Pasini said. "We just love it there."

Most families take advantage of Egypt's close proximity to Europe, Africa and the Far East and spend their vacations seeing such countries as England, France, Germany, Switzerland, Greece, Israel, Kenya, Japan and Thailand. The Pasinis are planning a trip to Hong Kong, Singapore and Bangkok, Thailand.

For Bitterburg and his wife, Pam, one of the major advantages of living overseas is the educational experience it is providing their two daughters, Kelli, 10, and Stacy, 8. "One day when we return to the United States and my daughters are studying geography of different lands, they will be able to say that they have actually been there and show their classmates pictures of their experience," Bitterburg said.

Kelli and Stacy attend the Cairo American College in Maadi, a suburb of Cairo. Cairo American College is an international grade school and high school that provides an American curriculum for dependents of expatriate employees in Cairo. "Stacy cannot get over how many of her classmates are from different countries around the

world," Pam said. "The school is excellent, and the exposure to a second culture is a very positive experience in itself, one that no book or classroom can teach." Kelli and Stacy find things in Egypt are different from what they studied in school in the United States. "Kelli never expected to see a donkey cart going down the street," Pam said.

As Manufacturing Engineering Supervisor, Bitterburg is assisting the Egyptians with the start-up of their tank parts manufacturing plant, and he works with Egyptian engineers who will be responsible for a particular area of manufacturing. He acts as an advisor and trainer, going over operations sheets, answering questions and explaining why things are done in a certain way. "These engineers with whom I am working will eventually be the manufacturing area managers and supervisors who will train their work force," he said. "So, it is important they totally understand all aspects of the operations sheets."

Pasini is a Material Control Manager on the ETP Program, bringing over 30 years of experience in material and production control with General Dynamics and Chrysler. "My responsibilities in Egypt differ from those I had in the United States," Pasini said. "Rather than being the one responsible for implementation, I am responsible for acting as a consultant and advisor to those responsible for the implementation. Sometimes it is difficult to stand back and watch instead of getting in there and doing the hands-on work myself." Pasini's greatest satisfaction of the job assignment in Egypt is "being an important part in the training process of the fine young Egyptian engineers, who display energy and eagerness to learn."

Pasini said living conditions in Egypt are much different than in the United States. "Grading them as better or worse would not be fair to either country," he says. "Differences in food are very minimal; however, food shopping and preparation processes are somewhat different."

Instead of purchasing groceries all at one supermarket, one will purchase meat at a local butcher's, bread at the bakery, canned goods and staples at a mini-market and fresh fruits and vegetables at two or three different open-air vegetable stands. Preparation of a basic meal sometimes can be very time consuming.

The Bitterburgs and the Pasinis agree that entertainment in Egypt is really what you make of it. There are many television shows, but very few in English. The news is broadcast in English once a day for 15 minutes, mostly about Egyptian current events. An American serial or movie comes on for about an hour each day. As a result, videotaped U.S. television programs sent over from the U.S. are welcomed and enjoyed immensely.

But, entertainment is usually self-made. Many GDSC families in Cairo belong to one of the local hotel athletic clubs where they enjoy swimming and tennis. "Occasionally we take evening walks around the neighborhood," Bitterburg said. "It is quite safe here to do that." He said he and his family feel very safe in Egypt despite the political tensions in the Middle East.

A typical weekend will usually find some families deep inside Cairo's ancient shopping bazaar — the Khan El Khalili — bargaining with the merchants for the worked gold, silver, precious stones, leather goods and other typical Mideast wares they sell. The American shoppers enjoy "the personal way in which the local merchants serve us and always meet us with a smile," one employee said.

Entertaining friends for dinner is a frequent means of enjoyment in the expatriate community. Many expatriate families find that a special bond develops among families on an overseas program that often results in friendships that endure throughout the years no matter where the families' next assignments lead them.